CALIFORNIA COAST REDWOOD

(*Sequoia sempervirens*)

AN ANNOTATED
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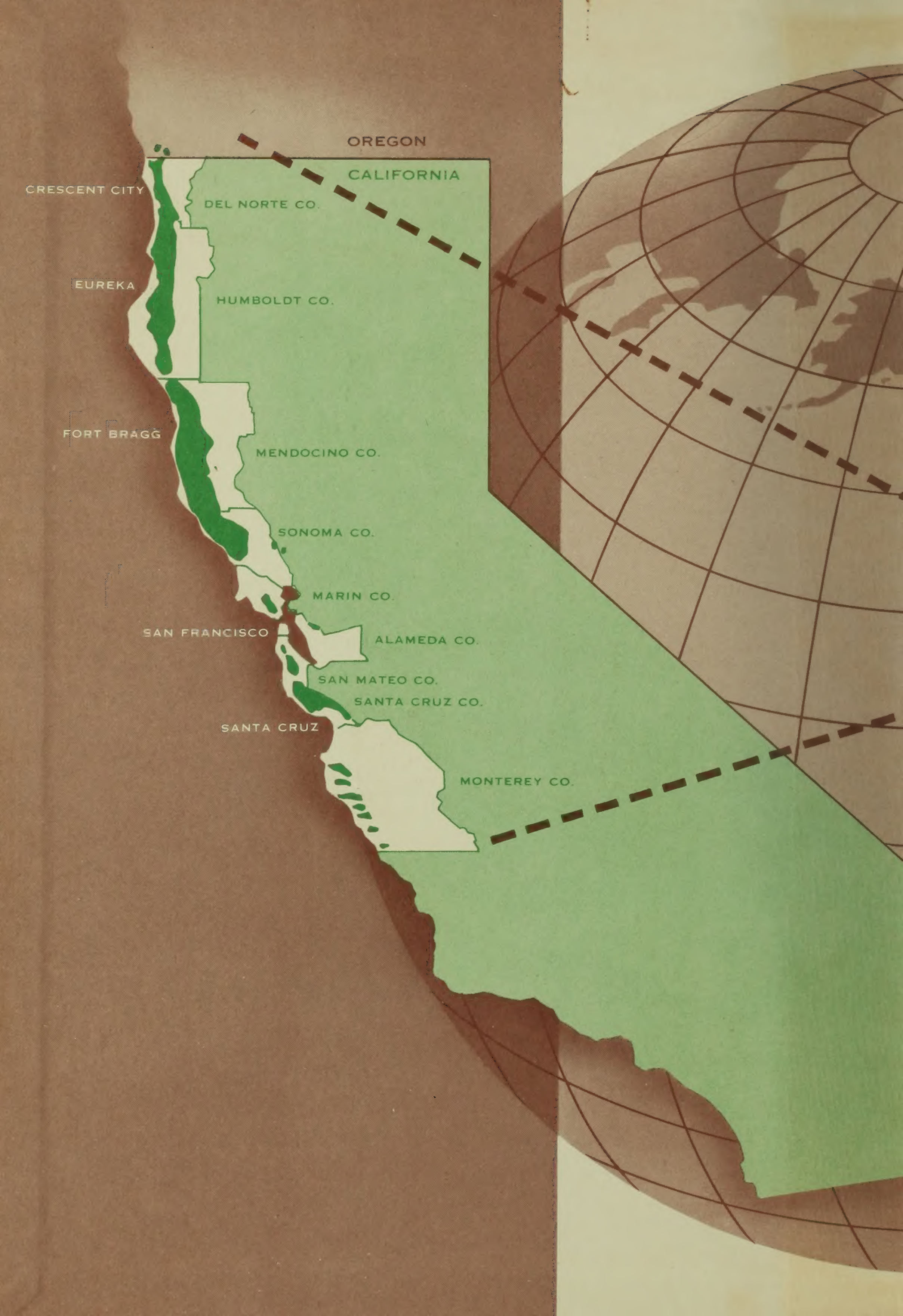
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CALIFORNIA COAST REDWOOD

(Sequoia sempervirens)

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[*Sequoia sempervirens* (D. Don) Endl.]

An Annotated Bibliography
to and including 1955
compiled by
Emanuel Fritz
Professor of Forestry, Emeritus
University of California

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Dedicated to
Chief Sequoyah
Inventor of an alphabet for the
Cherokee Indians
and for whom the
genus Sequoia was named

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Foreword

For tens of millions of years there were redwoods somewhere in the world. Now the redwoods are found only in California and there are a few living specimens today that were growing before the time of Christ.

No American tree has excited man's wonder and imagination so much as has the California redwood. From the early days of its discovery men have crossed the seas and our continent to see for themselves how large, how old, how grand a tree can be and how awe inspiring and majestic as a forest.

The Coast redwood is not only beautiful and inspiring; it is useful also. Wisely, the people of California, and of America, have made it possible to preserve, as state parks, the more superb of the stands in their primeval grandeur. Barring catastrophies, these parks should be the delight and satisfaction of generations yet to come. It is gratifying, too, that those areas of these great trees more useful for commercial purposes are being so managed that this species will offer to man materials for his homes and industries in perpetuity.

To make it possible for future writers to have ready reference to the literature already available this bibliography has been compiled and published.

It is the ardent hope of the Foundation for American Resource Management that the bibliography will be helpful to researchers and writers in their quest for information on the California Coast Redwood.

C F Rehnborg

C. F. REHNBORG
President

FOUNDATION FOR AMERICAN RESOURCE MANAGEMENT

Introduction

This Bibliography is intended to assist those seeking information on the California Coast Redwood tree and forest but lack the facilities for locating or examining the extensive list of articles, pamphlets and books bearing on the subject. To make the coverage as wide as possible, a search was made for pertinent subject material through books, magazines, some newspapers, and library files of processed materials and manuscripts.

The user is advised to consult the paragraphs below on how the Bibliography was prepared and how it should be used.

Organization

The Bibliography cites items of literature on all aspects of the Coast Redwood — its progenitors, its artificial planting in foreign countries where it will be regarded as an exotic, and its appearance in fiction and poetry, as well as literature on the present living species, its commercial lumbering and efforts to preserve superlative stands for posterity.

Although the compiler collected a large portion of the citations himself, he had the help of a succession of graduate student assistants led, in 1935, by John N. Mitchell, who helped organize the system of collecting. In 1955, when the Foundation for American Resource Management (FARM) decided the Bibliography should be published to make it more generally available, a trained librarian, Mrs. Mary Jackman, was employed to check each citation and edit it according to a uniform and established system she had prepared.

While the literature on Coast Redwood may be considered voluminous, it is widely scattered in magazines, reports and books. An ample part of it is of basic value, but much of it is second or third hand. Some writers were apparently so overcome by the stature of the tree and the magnificence of the forest that their descriptions exhausted the dictionary for superlatives. Others perpetuate errors or fallacies. Their reactions, nevertheless, deserve preservation for study by critical writers. Some short articles, which ordinarily would be regarded as trivial or ephemeral, were found to contain a new thought or an item of technical or historical interest. Thus, the Bibliography cites a number of brief notes that may not come to one's notice in an ordinary search for information, as well as those that have prime value as scientific or technical contributions.

No claim is made that the Bibliography is complete. Even after the typed pages were in galley form some important omissions were noted. Lumber trade magazines were culled only for the more important articles and notes. The year 1955 is considered the end year for the collection. Some important material published in 1956, during the process of preparing the typed copy for the printer, was included when possible. Should omissions of printed, processed or manuscript material be noted, the compiler will be grateful to have them called to his attention for inclusion in a possible supplement.

The classified list of the citations (see Table of Contents) was set up to match the subject matter itself, and departs somewhat from the standard used by libraries. Since there is considerable overlap of classifications within many articles, some liberties were taken with the general use of classification headings to place the material where it seemed to fit best. The Subject Index, however, crosses the classifications and is in greater detail. This emphasizes the importance of the Subject Index.

The classified list of citations is arranged alphabetically by authors within each classification, but the numbers run consecutively and continuously across the classifications.

In most cases, each numbered citation is one piece of literature. In some cases, separate listings occur for each part or chapter dealing with different subject material within a more extensive publication.

Unfortunately, a good deal of excellent material on redwood appears in "processed" papers — typed, mimeographed or multilithed — and this is not generally available. However, most of it can be found in the libraries of the University of California. When not so available, the known repository is indicated.

Included are some citations of material bearing solely on the Sierra Redwood *(Sequoia gigantea)* or referring only in small part to the Coast Redwood *(Sequoia sempervirens)*. These were included because of the close relationship between the two species and for reference by those who are interested in comparisons.

For the same reason and because it has been misnamed Redwood, the newly discovered genus *Metasequoia* is included. In the Subject Index references to the living trees and fossil specimens will be found under Metasequoia and Paleobotany, respectively.

Use of the Bibliography

If the author is known, the alphabetical Author Index should be consulted for the item number. Then the item should be consulted, by its number, in the main classified list for the complete title, source and annotation. In the Author Index, some long titles have been abbreviated.

If material bearing on a broad classification is desired, consult first the appropriate classification of the subject materials, as listed in the Table of Contents. If it is desired to find references to details, such as age, burls, lumber, uses, etc., the Subject Index should be consulted first, then the main list of citations under the appropriate item number or numbers. Generally, the Subject Index can be regarded as the more important part to search first, but only the classified list of citations gives the character, nature or scope of the contents of a specific item.

For quick reference the following numbers of basic literature may be consulted: For the tree and forest, No. 378; for the wood, Nos. 698 and 787; and for uses of the lumber, No. 1619.

For miscellaneous references to the tree and forest, consult the Subject Index under Forest, pages 255-256; and Tree, page 265.

Acknowledgments

In addition to Mr. John N. Mitchell and Mrs. Mary Jackman, already mentioned above, the compiler is indebted also to Miss Margaret Berry, who completed the checking when Mrs. Jackman left California; to Miss Marjorie Lawson for typing the manuscript, proofreading and cross-checking; to Mrs. Edith Peterson, office manager of FARM, for additional typing, proofreading and substantial assistance in publication; and to Mr. Irving Hochman of Recorder-Sunset Press, who made many valuable suggestions for the format of the book. For all this very helpful assistance the compiler is deeply grateful.

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CALIFORNIA COAST REDWOOD

Univ. Press, Cambridge, England. Illus.

Brief description under "Redwood," p. 28, vol. 19; under "Sequoia" the genus and both species are covered in a concise article covering the outstanding known facts, mainly botanical, geographical and historical, p. 339, vol. 20. Same in later editions to 1956.

10 FARIS, JOHN T. 1920. Seeing the Far West. Lippincott, Philadelphia.

Redwood groves of Santa Cruz County, p. 321.

11 FERNOW, B. E. 1900. Sequoia. In *Johnson's Univ. Encyclopedia,* 10:429-430. Illus.

Good general article on the tree and uses, and including information on the name and discovery of the species.

12 FRITZ, EMANUEL. 1950. The Future of the Redwoods. [Berkeley, Calif.] 9 p. Processed.

Talk before the Regional Parks Assoc., Jan. 16, 1950. Description of the tree and the forest, including some of the fallacies about redwood, a brief outline of methods of cutting, and the proposed Tree Farm program of the Calif. Redwood Assoc.

13 FRITZ, EMANUEL. 1936. Redwood Trees and Their Wood. *The Hoo-Hooter,* pub. by the Twin Cities Hoo-Hoo Club, Minneapolis, Minn. 13:1, 4. Feb. 20, 1936.

General article on characteristics of the tree, properties of the wood, and on the redwood region.

14 FRITZ, EMANUEL. 1938. What of the Redwoods. *Western Trees, Parks and Forests* [*Trees*] 1:12, 16. June 1938. Illus.

A general article calling attention to the outstanding character of the redwood forest, the work of the Save-the-Redwoods League to acquire forests for parks, and the progress of the selective cutting program.

15 FRY, WALTER, and JOHN R. WHITE. 1930. Big Trees. Stanford Univ. Press, Stanford, Calif. (rev. ed. 1938). 126 p. Illus., index.

Popular description of Sierra redwood; several references to Coast redwood.

16 GANNETT, LEWIS. 1934. Sweet Land. Doubleday, New York.

Redwoods north of San Francisco, p. 138-144.

17 GIBBONS, WILLIAM P. 1893. The Redwood in the Oakland Hills. *Erythea.* 1:161-166. Aug. 1893.

An account of some of the large trees which were cut in the Oakland hills. Apparently the area covered was 5 miles square and isolated from any other redwood forest by at least 25 miles. To the west of the highest point of the Oakland hills was found a stump (in 1855) 21 feet across without the bark; also the united stumps of 3 trees, giving the appearance of one, 57 feet in diameter. Three instances are noted of finding buried redwood logs, the most notable being 200 feet below the surface on the Oakland mole.

18 GOULD, C. W. 1920. Commercial Woods of the Pacific Coast. *Timberman.* 21:34-42. Feb. 1920. Illus., tables.

Brief statement on size, range, annual production, properties and uses of redwood, p. 39. Redwood is suggested for paving blocks, p. 42.

19 GUPPY, ESTELLA L. 1925. Story of the Sequoia: "Nature's Noblest Legacy." Post Printing & Binding Co., Pasadena, Calif. 31 p.

Popular account of both redwoods from the early geological records, through the discovery by the white man, to the present.

20 HANZLIK, EDWARD J. 1928. The Redwoods. *Four L Lumber News.* p. 9, 40. July 1928. Illus., tables.

General data on the tree and forest, stressing size and reproduction; tables give yield data for fully stocked second-growth redwood.

21 HODGE, WM. C., A. E. COHOON, and C. G. SMITH. 1906. Forest Description of the Redwood Belt. . . . n.p., Berkeley. 6 no. in 1 vol. Processed.

Contents: General, by Wm. C. Hodge, Jr., 1906; Lumbering in the Redwood Belt, by C. G. Smith; Forest Description of Sonoma County, by A. E. Cohoon, 1904; Forest Description of Mendocino County, by C. G. Smith, 1903; Forest Description of Humboldt County, by C. G. Smith, 1902; Forest Description of Del Norte County, by C. G. Smith, 1904.

22 JENSEN, HERBERT A. 1939. Vegetation Types and Forest Conditions of the Santa Cruz Mountains Unit of California. U.S. Forest Serv. Calif. Forest and Range Expt. Sta. Forest Survey Release No. 1. 55 p. Illus., tables, maps. Processed.

Includes description, distribution, area tables of several types in acres (but no volumes), history of timber cutting. A map shows past and present mill locations, designating type of power used and period.

23 JOHNSTON, ARTHUR T. 1913. California: An Englishman's Impression of the Golden State. Stanley Paul & Co., London.

Redwoods of Santa Cruz, p. 207-213.

24 LAMB, FRANK H. 1938. Sagas of the Evergreens. W. W. Norton & Co., New York. 364 p. Illus.

Subtitled: The Story and the economic, social and cultural contribution of the evergreen trees and forests of the world. Part of Chapter 4, "The Sequoia Giants" is devoted to Coast redwood. A poetic treatment.

25 MATTOON, WILBUR R. 1936. Forest Trees and Forest Regions of the United States. U.S. Dept. Agr., Wash., D.C. Misc. Pub. 217. 54 p. Illus.

A list of the trees, by region, with dendrological notes; Coast redwood mentioned, p. 45. The combined area, with Sierra redwood, given as 1,544,000 acres.

26 MOSELEY, EDWIN LINCOLN. 1922. Trees, Stars and Birds: A Book of Outdoor Science. World Book Co., Yonkers-on-Hudson, New York. 418 p. Illus.

General description of Coast and Sierra redwoods and their habitat, p. 116-120.

27 NEWBERRY, JOHN S. 1857. Report upon the Botany of the Route. In *U.S. War Dept. Reports of Explorations and Surveys . . . for a Railroad from the Mississippi River to the Pacific Ocean . . . in 1853-1854.* vol. 6. Beverly Tucker, Printer, Wash., [D.C.] Illus. (33d Cong., 2d sess. Senate. Ex. Doc. 78.)

Description of the climate and vegetation of the Coast Mountains, p. 11-12; drawing and description of redwood, p. 58.

28 NEW INTERNATIONAL ENCYCLOPEDIA. 1929. Redwood; Sequoia. Dodd, Mead & Co., New York. 1930.

Brief, sketchy article under "Redwood" in vol. 19, p. 626; under "Sequoia" Coast redwood is merely mentioned, most of the article is on Sierra redwood, vol. 20, p. 715-716.

29 PACK, CHARLES LATHROP and TOM GILL. 1934. Forest Facts for Schools. Macmillan, New York. 236 p. Illus.

Contains many references to Coast and Sierra redwood, including a description of the Pacific Coast forest, p. 93-95.

30 PEATTIE, DONALD CULROSS. 1950. Titan of Trees. *Country Gentleman.* 120:32, 161-164. Nov. 1950. Illus.

Popular, general article, mostly descriptive of the tree and its wood.

31 PLUMMER, H. W. 1886-1887. [Four Essays on California Redwoods.] [San Francisco.]

The essays were probably advertising brochures, since the back page solicits investment in redwood lands.

1. "California Redwoods." Mostly uses; 3 p. *Wood & Iron.* 6(1):9. July 1886.

2. "Redwood Timber Lands, Their Present and Future Value." 3 p. *Wood & Iron.* 6(2):25. Aug. 1886.

3. "That Remarkable Article on Redwood" refers to an article in *Northwestern Lumberman* ("of the 21st ultimo") which Plummer felt devalued redwood lands; 3 p. Dated: Oct. 15, 1886. *Wood & Iron.* 6(5):69? Nov. 1886.

4. "The Redwood Lands of California." Mostly on Humboldt County: gives some figures on production and prices; shipments for 1886-1887; estimated acres in redwood; railroad development; kiln drying; 12 p. Dated: April 20, 1887. *Timberman* [*American Lumberman*] May 21, 1887.

32 RIDER, FREMONT. 1925. Rider's California: A Guide Book for Travelers. Macmillan, New York.

Origin of name "Palo Alto," p. 154; Original extent of redwood belt, amount logged off and antiquity of the genus Sequoia, p. 173-175; Redwood Highway, p. 177-178.

33 ROBINSON, C. D. 1882. The Two Redwoods. *Californian.* 5:481-491. June 1882. Illus.

General description of the trees and their regions.

34 SAN MATEO COUNTY. DEPT. OF PUBLICITY. n.d. Peninsula Passport. San Mateo Co., Redwood City, Calif.

Partial contents: La Honda Grove of redwoods; Woodside Store built in 1854 of redwood; Ancient redwood tree already 1,000 years old when America was discovered; Redwoods in Butano forests.

35 SARGENT, CHARLES S. 1884. Report on the Forests of North America (Exclusive of Mexico). [U.S.] Dept. of the Interior, Census Office, Wash. [D.C.] 612 p. Tables, map, index. (U.S. Census Office, 10th Census, 1880.)

Contains botanical description and uses of wood, p. 184-185. Many tables summarize the chemical composition and mechanical properties of the wood. The economic value of redwood is stressed, and a table shows the estimated stand and cut for 1880, p. 578-579. Map shows the position of standing timber and cutover areas for 1881.

36 SAUNDER, CHARLES FRANCIS. 1916. Finding the Worth While in California. R. M. McBride & Co., New York.

Redwood forests, p. 100-102; Reservation of the Muir redwood forests, p. 145-146.

37 SHERWOOD, GEORGE H. 1902. The Sequoia: a Historical Review of Biological Science. *Amer. Museum J.* 2(8):3-28 (supplement). Nov. 1902. Illus., map.

In 1893 the American Museum of Natural History secured a section of Sierra redwood from the "Mark Twain" tree, for exhibition. The tree was 1,341 years old when cut in 1891. This paper is an historical review of the "political events and discoveries . . . since the year 550" and "the progress in biology" as correlated with the life of the tree. Brief mention only of Coast redwood.

38 SHINN, CHARLES H. 1922. California and Forestry; Parts 1-3. *Univ. of Calif. Chronicle.* 24:442-449; 25:105-113, 236-243. Oct. 1922/Jan. 1923.

Many references are cited pertaining to California forests; only one direct mention of redwoods, p. 447.

39 SHINN, CHARLES H. 1899. The Great Sequoia. *Garden and Forest.* 2:614-615. Dec. 25, 1899.

Primarily concerns Sierra redwood, with brief references only to Coast redwood.

40 SHIRLEY, JAMES CLIFFORD. 1937. The Redwoods of Coast and Sierra. Univ. of Calif. Press, Berkeley. 84 p. Illus., biblio.

A popular book on the two redwoods, including brief sections on their discovery, nomenclature, paleontology, reproduction, size, age, uses, and a plea to preserve them.

41 TAYLOR, WILLIAM. 1858. California Life Illustrated. Pub. for the author by Carlton & Porter, New York. 348 p. Illus.

Rev. Taylor arrived in San Francisco in 1849 and finding it very difficult to rent a house in which to live, went 15 miles across the bay to the redwoods near San Antonio, where he cut the timber to build a house for his family.

42 U.S. DEPT. OF AGRICULTURE. 1949. Trees, Yearbook of Agriculture. U.S. Govt. Printing Office, Wash., D.C. 1949. 944 p. Illus.

Excellent supplemental reading reference which shows the interrelation of man to the forest. Also includes a key to the trees of the United States.

43 WALLACE, ALFRED. 1891. Flowers and Forests of the Far West. *Fortnightly Review* [London]. 56 (old ser.):796-810. Dec. 1, 1891.

Primarily on the forests of the Sierra Nevada, but one paragraph on p. 809 describes Coast redwood age and size and ability to sprout, emphasizing diminishing stands due to lumbering.

44 WHITNEY, JOSIAH D. 1865. Geology of the Coast Ranges. In *Calif. Geological Survey. Geology: vol. 1.* [Paxton Press of Sherman & Co., Philadelphia] p. 1-197. Index.

Subtitled: Report of progress and synopsis of the field-work, from 1860-1864. Mentions the Santa Cruz groves; one tree "measured fifty feet in circumference at the base and is said to be 275 feet high . . ." p. 64.

45 WOLFE, LINNIE MARSH. 1945. Son of the Wilderness: The Life of John Muir. Alfred A. Knopf, New York. 346 p. Illus.

Contains several references to destruction in the redwood region, and to the height of the trees.

RESOURCES. (Rough estimates, surveys, statistics)

46 ANON. 1923. California, Where Life is Better. Californians Inc., San Francisco.

Preserving the redwoods. Seven-tenths of original million acres of virgin redwood forests remain untouched by ax or saw.

47 ANON. 1855. Contra Costa Redwoods. *Alta California,* San Francisco. 6 (202):2. Aug. 16, 1855.

In these woods may be found some of the most splendid and wild scenery in California.

48 ANON. 1900. Forest Possibilities. *Pac. Coast Wood and Iron [Pioneer Western Lumberman].* 33:49. Feb. 1900.

Redwood forests, if handled properly, should be a source of wealth for all time.

49 ANON. 1887. Humboldt County. *Pac. Coast Wood and Iron.* 8:20. Aug. 1887.

Article quotes Mr. H. C. Putnam, stating that in the Lindsay Creek tract "2,500,000 to 3,000,000 feet of redwood on several acres, and an average on the 12 acres which we measured of over 1,000,000 feet per acre. . . . There is estimated to be 750,000 to 800,000 acres of timberland in Humboldt County, of which ⅔ may safely be set down as redwood land. . . ." (Lindsay Creek was logged by Dolbeer and Carson Lbr. Co.)

50 ANON. 1889. [Rapid Destruction of the California Redwood.] *Humboldt Times Daily,* Eureka, Calif. 31 (48):2. Feb. 27, 1889.

The Chief of the Forestry Div. laments the rapid destruction of the California redwood. No occasion to seek foreign orders, as domestic needs are fast depleting the supply.

51 ANON. 1877. Redwood Timber in Sonoma County. *Humboldt Times Daily,* Eureka, Calif. 8 (78) : 3. Sept. 30, 1877.

Estimating the redwood timber in Sonoma County by locations and acreage.

52 ANON. 1854. The Redwoods. *Alta California,* San Francisco. 5 (161) : 2. June 11, 1854.

Description of First, Second, and Third Redwoods to the eastward of Oakland.

53 ANON. 1875. Redwoods of California. *The Gardener's Chronicle* [London]. 4:516. Oct. 23, 1875.

Government surveyors estimate the areas of redwood timber in California at 500,000 acres. Speculation on the duration of supply. Similar material appeared in the *Sonoma Democrat.*

54 ANON. 1874. The Redwoods of Humboldt Co. *Humboldt Times Daily,* Eureka, Calif. 2 (133) : 2. Dec. 4, 1874.

Extent of acreage and probable duration of redwood.

55 ANON. 1874. Timber Resources of Humboldt Co. *Humboldt Times Daily,* Eureka, Calif. 2 (119) : 3. Nov. 15, 1874.

Extent and condition of timber lands in Van Dusen, Salmon Creek and Elk River sections.

56 ANON. 1874. Timber Resources of Humboldt Co. *Humboldt Times Daily,* Eureka, Calif. 2 (122) : 2. Nov. 19, 1874.

The Mad River timber belt.

57 ANON. 1874. Timber Resources of Humboldt County. *Humboldt Times Daily,* Eureka, Calif. 2 (123) : 2. Nov. 24, 1874.

Total amount of timber on lands of Freshwater, Ryan's Slough, Jacoby Creek and in forests about Arcata.

58 AMERICAN FOREST PRODUCTS INDUSTRIES, INC. 1956. Facts About the Forests of the Redwood Region. Amer. Forest Prod. Industries, Inc., Wash., D.C. 16 p. Illus., tables.

Prepared for use as reference material by editors; gives data on area, volume, growth, production.

59 BAKER, HAROLD L., and ADON POLI. 1953. Area and Ownership of Forest Land in Del Norte County, California. U.S. Forest Serv. Calif. Forest and Range Expt. Sta., Berkeley. 23 p. Jan. 1953. Illus., tables. Processed. (*Its* Forest Survey Release No. 18.)

60 BAKER, HAROLD L., and ADON POLI. 1952. Area and Ownership of Forest Land in Humboldt County, California. U.S. Forest Serv. Calif. Forest and Range Expt. Sta., Berkeley. 23 p. Nov. 1952. Illus., tables. Processed. (*Its* Forest Survey Release No. 16.)

61 BAKER, HAROLD L., and ADON POLI. 1951. Area and Ownership of Forest Land in Mendocino County, California. U.S. Forest Serv. Calif. Forest and Range Expt. Sta., Berkeley. 23 p. Oct. 1951. Illus., map, tables. Processed. (*Its* Forest Survey Release No. 10.)

Tables included are on type of ownership for species by age class of timber, density of stand, site quality, etc. Data figures as of 1948. Volume estimates are omitted.

62 BAKER, HAROLD L., and ADON POLI. 1954. Area and Ownership of Forest Land in San Mateo County, California. U.S. Forest Serv. Calif. Forest and Range

Expt. Sta., Berkeley. 22 p. May 1954. Illus., tables, map. Processed. (*Its* Forest Survey Release No. 22.)

Presents statistics as of 1948. Tables list 48,000 acres of commercial redwood forest land.

63 BAKER, HAROLD L., and ADON POLI. 1953. Area and Ownership of Forest Land in Santa Cruz County, California. U.S. Forest Serv. Calif. Forest and Range Expt. Sta., Berkeley. 22 p. Aug. 1953. Illus., tables, map. Processed. (*Its* Forest Survey Release No. 21.)

Presents statistics as of 1948. Tables list 123,000 acres of commercial redwood forest land.

64 BAKER, HAROLD L., and ADON POLI. 1952. Area and Ownership of Forest Land in Sonoma County, California. U.S. Forest Serv. Calif. Forest and Range Expt. Sta., Berkeley. 23 p. Sept. 1952. Illus., map, tables. Processed. (*Its* Forest Survey Release No. 14.)

"This release presents the statistics of forest areas and forest land ownership . . . as of 1948. Besides the statistics on the extent, location, and condition of all forest lands and timber stands on those lands, this report presents quantitative data on type and size of ownership and number and kinds of owners. Estimates of timber volume are not included. . . ."

65 HANNUM, WARREN T. 1949. Where Are We Heading for Future Supplies of Lumber? *In* R.R.L.C. Proc., May 1949, p. 31-36. Mimeo.

Redwoods, p. 33-36.

66 JEPSON, WILLIS L. 1907. A World of Timber. *Sunset.* 20:97. Nov. 1907.

Bald Mountain in Mendocino Co. furnishes a view of more timber than can be seen from any other point in the world.

67 JORDAN, FRANK C. 1928. California Blue Book. State Printer, Sacramento.

Timber, Del Norte Co., p. 292.

68 MARKHAM, H. H. 1893. Resources of California. State Printer, Sacramento.

Redwood timber: Humboldt Co., p. 26; Mendocino Co., p. 40; San Mateo Co., p. 70; Santa Cruz Co., p. 76; Sonoma Co., p. 84.

69 U.S. FOREST SERVICE. CALIF. FOREST AND RANGE EXPERIMENT STATION. 1941. California Forest Statistics. Berkeley, Calif. July 7, 1941. Tech. Note No. 16. 17 p. Tables. Processed.

Tables give data on area, timber stand and cut for the redwood region. (Note: These are approximate data only.)

70 U.S. FOREST SERVICE. CALIF. FOREST AND RANGE EXPERIMENT STATION. 1935. The Forests and the Lumbering Industries of California. Berkeley, Calif. Aug. 1, 1935. Tech. Note No. 5. 7 p. Table. Processed.

Includes a brief discussion of redwood area and stand. Table gives stand of merchantable old-growth timber, by counties, for all ownerships.

71 U.S. FOREST SERVICE. CALIF. FOREST AND RANGE EXPERIMENT STATION. 1954. Forest Statistics for California. Berkeley, Calif. 66 p. Tables. (*Its* Forest Survey Release No. 25.)

"This release presents statistics of forest area, timber volume, and ownership for Calif. as of Jan. 1, 1953 . . . based on . . . data collected from 1946 through 1952 and adjusted for changes up to Jan. 1, 1953." Includes redwood data.

72 U.S. FOREST SERVICE. CALIF. FOREST AND RANGE EXPERI-

MENT STATION. 1953. Forest Statistics for the Redwood—Douglas-fir Subregion in California. Berkeley, Calif. 54 p. Jan. 1953. Illus., tables, map. Processed. (*Its* Forest Survey Release No. 19.)

Contains statistics on forest land area and ownership, estimates of timber volume, growth, and drain.

73 U.S. FOREST SERVICE. CALIF. FOREST AND RANGE EXPERIMENT STATION. 1949. The Timber Stand and Vegetation-Soil Maps of California. Berkeley, Calif. 15 p. Illus., maps.

Description of the aerial-photo study and field observation work which formed part of the Forest Survey of California, with explanations of what the maps show and suggestions for their use.

74 WALLEN, ARNOLD F. 1953. Forest Resources—California's North Coast Forest Region. Soc. Amer. Foresters. Northern Calif. Section. *Papers presented* Dec. 5, 1953. p. 4-9. Tables. Processed.

A presentation of data on timber resources of the redwood region.

75 WALLEN, ARNOLD F. 1951. Forest Resources of the Redwood Region. *Western Forestry and Conserv. Assoc. Proc.* 42:28-29. Tables.

Gives the author's estimate of area and timber stand.

76 WIESLANDER, A. E. 1949. The Statewide Forest Survey: Progress Report on the Redwood Region Survey. *In* R.R.L.C. Proc., May 1949. p. 5-8. Mimeo.

77 WIESLANDER, A. E., and HERBERT A. JENSEN. 1946. Forest Areas, Timber Volumes and Vegetation Types in California. U.S. Forest Serv. Calif. Forest and Range Expt. Sta., Berkeley. March 1, 1946. 66 p. Illus., maps, tables. Processed. (*Its* Forest Survey Release No. 4.)

Tables include data for: species and county; site quality and ownership; county board-foot volumes by species and ownership; board-foot volumes, etc. by species for availability class and ownership. Redwood cropland listed as 1.9 million acres, available old growth stands as 30.2 billion b.f., available young growth stands as 1.8 billion b.f. Tables and maps are based on existing aerial photographs, timber cruises, and sample plots as of Jan. 1, 1945.

COUNTIES OF THE REDWOOD BELT (See also RESOURCES)

78 ANON. 1895? Eureka and Humboldt County. Holiday Ed., *Thompson's Illus. Q.* [Eureka?] R. M. Thompson & Co. Illus.

Subtitled: A Compilation of facts for the information of business men, tourists and the world at large. Primarily brief biographies of the business men of the time; some on logging. An advertisement for the region.

79 ANON. 1923. Humboldt and Mendocino Counties. *San Francisco Chronicle,* San Francisco. March 14, 1923.

Mendocino: rich in undeveloped opportunities, p. 3; lumber industry and uses of cutover lands, p. 6. Humboldt: scenic asset, p. 9; redwood belt and its value to the lumber industry, p. 11, 15; original and present redwood stand and program of reforestation, p. 12.

80 ANON. 1887. Humboldt County, California. C. W. Nevin, San Francisco.

Extent of territory, subdivision and general characteristics, as well as the timber and lumbering in the county.

81 ANON. 1930. Magnificent Mendocino County — In Heart of Redwood Empire. Sec. 3, *The Redwood Journal.* Fort Bragg Chamber of Commerce, Ukiah, Calif.

Mendocino is one of the three counties containing most of the redwood forests. The government estimates the total stand to be 100,000,000,000 feet and at the present rate of production, redwood should last 200 years longer.

82 AYERS, WILLIAM. 1906. Humboldt County and the City of Eureka. *Out West.* 24:559-568. June 1906. Illus.

A general description of the resources and advantages; particular stress not only on the redwood industry, but also on the use of the land for agriculture after clear-cutting.

83 BANCROFT, HUBERT HOWE. 1890. History of California. The History Co., San Francisco, 1884-1890. 7 vols. Index.

The history of California from 1542-1890. Contains histories of the counties, expeditions, railroads, etc. Index in vol. 7.

84 CARPENTER, AURELIUS O., and PERCY H. MILLBERRY. 1914. History of Mendocino and Lake Counties. Historic Record Co., Los Angeles. 1045 p.

Notes the sawmills in the various townships in Mendocino County, stating that the first sawmill was built in Anderson township by John Gschwend in 1856.

85 CARR, E. B. 1888. Commercial Interests of Southern Humboldt, Her Products and Resources. R. B. Carr, Ferndale, Calif.

On Bull Creek is to be found one of the finest and heaviest bodies of redwood timber on the coast, p. 6. Redwood for the markets of Europe, South America, Australia, Mexico and the Eastern States, p. 19.

86 COMMERCIAL JOURNAL CO. n.d. Lumber's Map of California. Commercial Journal Co., St. Louis, Mo. [c191-?]

Map, 12 x 24 inches. Redwood divided into three districts; map indicates roads and railroads. List of logging operations, by district, with indication of companies operating logging railroads.

87 COY, OWEN C. 1919. Guide to the County Archives of California. Calif. Hist. Survey Commission, State Printing Office, Sacramento. 622 p. Maps.

Contains a listing of official and private records, including newspapers, available for reference in the various counties; also, a map and a brief history of each county accompanies the listings.

88 CRONISE, TITUS FEY. 1868. The Natural Wealth of California. H. H. Bancroft & Co., San Francisco. 696 p. Illus., index.

Redwood described p. 506-508, including associated species. On various pages, each county is described, giving history, lumber and mills.

89 CUTTEN, C. P. 1932. The Humboldt Bay Region. *Soc. of Calif. Pioneers Q.* 9:7-39. March 1932.

Discusses events leading up to the discovery of Humboldt Bay by the Gregg party as recorded by L. K. Wood, and gives some biographical notes on members of the party. Very little on redwood specifically.

90 DEL NORTE COUNTY. BOARD OF SUPERVISORS. 1922. Del Norte County and Adjacent Territory. Del Norte Co. Board of Supervisors, Del Norte, Calif.

Shipment of redwoods, p. 5.

91 EMERSON, F. W. 1903. Among the Redwoods of Humboldt County. *Overland Monthly.* 42 (ser. 2):69-96. July 1903. Illus.

Several illustrations of lumbering and equipment, with general information to accompany them. Industries other than lumbering are also explained and advertised.

92 FERGUSON, RUBY A. 1931. The Historical Development of the Russian River Valley, 1579-1865.

[Berkeley, Calif.] 161 p. Illus., biblio. Processed.

Thesis (M.A.) — Univ. of Calif. May 1931.

No specific reference to redwood, but provides an excellent background of colonization and exploration.

93 GILLIAM, HAROLD. 1951. Mendocino County: Big Trees, Big Scenery and Big Money. *San Francisco Chronicle: "This World" section,* 15:2-3. May 20, 1951. Illus., map.

One of a series of county stories. States that half the wealth comes from lumber, and describes the lumber industry, with comments on the possibility of permanence.

94 HILGARD, E. W. 1883. Report on the Physical and Agricultural Features of the State of California. Pacific Rural Press, San Francisco.

The Coast Range region, p. 46; Redwood Belt, p. 56; Humboldt, Del Norte and Siskiyou counties, p. 120-121.

95 HOFSTED, EUGENE A. 1955. Timber Resources [Humboldt County]. *Redwood Region Logging Conf. Bul.,* Brizard-Matthews Machinery Co., Eureka, Calif. p. 9.

Recounts the events leading up to the holding of the Humboldt County Timber Resource Conference on March 26, 1955, and its results.

96 HOOVER, MILDRED BROOKE. 1937. Historic Spots in California: Counties of the Coast Range. Stanford Univ. Press, Stanford, Calif. 718 p. Index.

Material arranged by counties, giving some history and noting places of interest, including redwood.

97 HUMBOLDT STANDARD. 1939+ [Special editions . . .] *Humboldt Standard* [Eureka, Calif.]

Occasionally combined with the *Humboldt Times* to bring out an expanded edition of the Eureka newspapers to coincide with the Redwood Region Logging Conference. These issues contain numerous articles featuring resources of Humboldt County, but principally the redwood forests, lumber industry, split products industry, recreation, forestry and management, and history. Each issue contains several signed articles; numerous illustrations.

98 HUMBOLDT TIMES. 1937. 85th Anniversary Number. *Humboldt Times* [Eureka, Calif.]. March 21, 1937. Illus.

Special edition containing a number of articles on the history of the Humboldt Bay region, including lumbering, split products industry, flora of the region. Many signed articles.

99 HUMBOLDT TIMES and HUMBOLDT STANDARD. 1954. Northwestern California Celebrates a Century of Progress, 1854-1954. Centennial Edition, Eureka Newspapers, Eureka, Calif. Feb. 8, 1954. 228 p. Illus.

Contains a large number of articles on Humboldt County's lumbering history, operations, forests, plywood industry and related subjects. Many signed articles.

100 IRVINE, LEIGH H. 1917. What Humboldt Offers You. Humboldt Chamber of Commerce, Eureka, Calif.

Original redwood forests, p. 3-4, 8-9; Use of cutover redwood lands, p. 15.

101 LEWIS, OSCAR, ed. 1943. The Quest for Qual-a-wa-loo (Humboldt Bay). [San Francisco] 190 p.

Subtitled: A Collection of diaries and historical notes pertaining to the early discovery of the area now known as Humboldt County, Calif. Edited and published from manuscripts furnished by C. E. Pearsall, G. D. Murray, A. C. Tibbetts and H. L. Neall. Contains biographical chapters on Jedediah Strong Smith, Josiah Gregg, James Talbot Ryan, and Hans Henry Buhne.

102 LYMAN, CHALMER K. 1944. Topographic Mapping in the Redwoods. *Military Engineer.* 36:85-88. March 1944. Illus.

Similar material in *J. Forestry,* 43:265-268, April 1945, with title "Foresters as Topographic Mappers in the Redwoods."

Describes the ground work for the war-time aerial mapping job along the northern California coast. Illustrations and descriptions of tree topping for triangulation and panel stations.

103 MILNES, C. S. 1902. Souvenir of Humboldt County. Times Pub. Co., Eureka, Calif.

Lumbering: redwood areas, lumber shipments, mill products, exports of lumber and forest products 1901, wages, transportation problems, list of mills operating, p. 44-86.

104 NUTTING, H. N. 1881. California As It Is. San Francisco Call Co., San Francisco.

San Mateo Co. resources, p. 31.

105 PALMER, LYMAN L. 1881. History of Napa and Lake Counties. Slocum, Bowen & Co., San Francisco. 291 p.

Contains brief references to redwood in some of the Napa townships, primarily on the depletion of timber.

106 PALMER, LYMAN L. 1880. History of Mendocino County. Alley, Bowen & Co., San Francisco. 676 p.

General description of the tree, range, associates, burls, p. 105-107; reference to the mills and milling, p. 141-146; and the histories of the townships contain information on the timber found there.

107 RAYMOND, I. H. 1887. Santa Cruz County. Santa Cruz Development Assoc., Santa Cruz, Calif. 80 p.

Primarily a brochure on the advantages and resources of the county, compiled by the Secretary of the Association, and containing references to redwood for lumber and recreation.

108 ROBISON, WILLIAM CONDIT. 1949. The Historical Geography of the Santa Cruz Mountain Redwoods. [Berkeley, Calif.] 83 p. Illus., maps, biblio. Processed.

Thesis (M.A.) — Univ. of Calif. Jan. 1949.

Sections cover the redwood tree and forest; the natural environment; the pre-white period; Spanish explorers; colonial period; the rise and decline of logging; the present and future.

109 ROWLAND, LEON. 1947. Annals of Santa Cruz. [Branson Pub. Co.] Santa Cruz, Calif. 155 p. Illus., index.

County records to about the 1880's. Includes a few references to lumbering history.

110 THOMPSON, ROBERT A. 1877. Historical and Descriptive Sketch of Sonoma County. . . . L. H. Everts & Co., Phila. 104 p. Map.

Includes many references to redwood characteristics and products, and some information of mills and outputs.

111 THORNBURY, DELMAR L. 1923. California's Redwood Wonderland, Humboldt County. [Sunset Press, San Francisco.] 167 p. Illus., map.

Chapter 6 is on the redwoods; includes general facts about redwood, value of products of a single acre and maximum stumpage prices, and logging and milling descriptions, p. 35-42. Other chapters, on the discovery of the area and the ancient inhabitants, contain brief mention only of redwood.

112 UKIAH DAILY JOURNAL and UKIAH NEWS. 1954. "Welcome Loggers." *Ukiah Daily J.* and *Ukiah News* [Ukiah, Calif.] May 20, 1954. Illus.

Special edition for the 16th Redwood Region Logging Conference, containing numerous articles on logging, milling, forests and equipment in Mendocino County, and the Conference program and notes. Several signed articles.

113 VAN DYKE, WALTER. Recollections on Matters Connected with California and Oregon, 1849-1863. 28 leaves. MS. in University of California, Bancroft Library, Berkeley.

The recollections mention timber resources of the Humboldt Bay area.

114 VAUX, HENRY J., and EUGENE A. HOFSTED. 1954. An Economic Appraisal of Forest Resources and Industries in Humboldt County, Calif. Berkeley, Calif. 108 p. Tables, maps. Processed.

Also briefly covered in *Pac. Logger,* 2:16-17, 30-31, 36-37, May 1955, with title "Humboldt Timber."

Prepared for the Humboldt County Forestry Committee by the Univ. of Calif. School of Forestry and the Humboldt County Dept. of Forestry in cooperation with the Calif. Agricultural Extension Service. This is a thorough analysis of the resources and industries of the County, including forest products industries, wood-using industries, taxation, markets, demand and supply, utilization and salvage, roads and accessibility, ownership of timber, prices, logging and milling residuals, growth and supply and protection.

115 WALDRON, D. G. 1896. Humboldt County. *The Traveler.* 7:71. May 1896. Illus.

Article primarily on lumbering in the county. Mill of John Vance did 75% of the lumber trade. Lists shipments to Australia and other foreign countries. States the county has no railroad communication except short lines within itself; when transportation outlets are completed it is expected to do enormous lumber business.

FOREST OWNERSHIP AND LAND USE POLICY

116 ANON. 1901. Big Redwood Deal. *Amer. Lumberman.* 1350:36. April 6, 1901.

Virgin redwoods purchase, including fine landing at mouth of Chetco Creek.

117 ANON. 1877. A Good Bill. *Humboldt Times Daily,* Eureka, Calif. 8(102):2. Oct. 28, 1877.

Proposing that any citizen be permitted to cut trees on the public domain for legitimate purposes.

118 ANON. (Charles Judson.) 1953. Hope in the Humboldt. *Fortnight.* 14:9-11. May 11, 1953. Illus.

Descriptive of the efforts to improve the forest situation, stressing the Humboldt County Forestry Committee.

119 ANON. 1874. The Law to Encourage the Growth of Timber. *Humboldt Times Daily,* Eureka, Calif. 1(38):2. Feb. 13, 1874.

Change in the law provides that four years be given to cultivate 40 acres by which title to 160 acres can be acquired.

120 ANON. 1913. No Bids for Ward Timber. *Humboldt Standard Daily,* Eureka, Calif. 42(265):5. Nov. 10, 1913.

Thirty thousand acres of redwood lands on the Klamath River offered for sale to settle a suit but no bids are received.

121 ANON. 1877. The Public Timber Lands. *Humboldt Times Daily,* Eureka, Calif. 8(129):3. Nov. 29, 1877.

Urging a bill to stop depredations on public timber lands.

122 ANON. 1868. Redwood Forest For Sale. *Alta California,* San Francisco. 20(6715):2. Aug. 4, 1868.

Heavily timbered land in Santa Cruz offered for sale.

123 ANON. 1888. Redwood Frauds. *Humboldt Times Daily,* Eureka, Calif. 29(60):2. March 14, 1888.

California redwood timberland frauds discussed.

124 ANON. 1923. Redwood Sale Consummated. *West Coast Lumberman* [*Lumberman*]. 45:44. Oct. 1923.

Hammond Lumber Co. buys large timber lands in Humboldt County.

125 ANON. 1901. Redwood Stumpage Values. *Amer. Lumberman.* 1380: 16. Nov. 2, 1901.

Brief statement on the tendency of eastern and Lake States lumbermen to "drift" into the redwood region and acquire land.

126 ANON. 1927. Redwood Timber Claims. *Timberman.* 29:106. Dec. 1927.

How redwood timber could be secured from the government in the early days.

127 ANON. 1849. Redwoods and Other Timber. *Alta California,* San Francisco. 1 (38):4. Sept. 20, 1849.

Notice by J. W. Revere, U.S.N. Timber Agent for California, cautioning all persons against cutting redwood in quantities for sale on the lands belonging to the United States in California.

128 ANON. 1874. The Timber Land Bill. *Humboldt Times Daily,* Eureka, Calif. 1 (2):2. Jan. 2, 1874.

Giving the provisions of a bill introduced in Congress for the sale of timber lands.

129 ANON. 1878. Timberland Bill. *Humboldt Times Daily,* Eureka, Calif. 10 (27):3. Aug. 2, 1878.

"The principal provisions of the new timber land bill are: First, that the lands shall be sold at $2.50 per acre; Second, that only 160 acres shall be sold to any one person; Third, that purchases can only be made upon surveyed lands."

130 ANON. 1911. Valuable Redwood Timber Land Purchased. *Pioneer Western Lumberman.* 55:27. Jan. 1, 1911.

Highest price ever paid for Humboldt redwood.

131 ANDERSON, DEWEY. 1949. An Action Program for the Redwood Forest of California. Public Affairs Inst., Wash., D.C. Rpt. No. 5. 32 p. Illus., tables, map.

Booklet setting forth a plan to socialize the redwood region through a $150,000,000 R.F.C. loan. Also contains a statement by Earle H. Clapp. (Note: A full news release on this appeared in the *New York Herald-Tribune,* May 15, 1949, written by Stephen G. Thompson.)

132 ANDERSON, DEWEY. 1952. A Program for the Redwoods. Amer. Acad. of Political and Social Sci., Phila. *Annals.* 281:105-109. May 1952.

The author recommends taking over of redwood forests by the United States, and their management as national forests.

133 BARNES, C. P. 1933. Highest Use of Land. *J. Forestry.* 31:595-596. May 1933.

Brief argument stating that the highest use of land is that which yields the maximum satisfaction of human wants, and that for redwood, the author feels that "the greater number of people derive satisfaction from an acre of trees as trees, than as material."

134 BARRETT, LOUIS A. Papers, 1904-1920. 3 boxes. MS. in Library of Congress, Washington [D.C.], Forestry Collection.

Diaries and field notes of a member of the U.S. Forest Service in California.

135 CALIF. CHAMBER OF COMMERCE. 1946. Report of the Sub-Committee on the Proposed Redwood Memorial National Forest. n.p. 15 p. Processed.

Outline of the Douglas Bill (H.R. 6201) to create a Franklin Roosevelt Memorial Redwood Forest, with an analysis by the Committee of the effects such a bill would have on the private economy of the region, and their opposition to H.R. 6201.

136 CALIF. DEPT. OF NATURAL RESOURCES. DIV. OF FORESTRY. 1947. Forest Practice

Rules for Redwood Forest District. Calif. Dept. of Nat. Res. Div. of Forestry [Sacramento?] 32 p. Illus., tables, map.

"Prepared and Approved by Private Timberland Owners of California Pursuant to the Provisions of the Forest Practice Act, Chapter 85, Statutes of 1945. Given the Force of Law February 13, 1947, by Action of California State Board of Forestry." Includes volume tables.

137 CALIF. FORESTRY STUDY COMMITTEE. 1945. The Forest Situation in California. Report to the Legislature by the Calif. Forestry Study Comm., created by Chapter 1086, Stat. of 1943. State Printing Office, Sacramento, May 1945. 189 p. Illus., tables.

Prepared by Emanuel Fritz as Consultant to the Committee. Contains brief references to the redwood region specifically; however, the general statements of the report apply to the redwood region. The report covers: resources; supplies; production; consumption; cutover land conditions; depletion by cutting; insects, disease and fire; the lumber industry; impermanence of the industry; second growth; selective logging; tree farms; state regulation; state forests; taxation; county interests; state vs. federal control; land classification; watershed protection; fire protection; forest survey; research and education. Contains a supplement of 15 pages, "Forest Purchase Areas" recommended for acquisition by the State.

Also, "Preliminary Summary of the Report of the Calif. Forestry Study Comm." published in the *Senate Daily J.*, p. 26-35, Jan. 24, 1945, Calif. Legis., 56th sess. See also, "The Forest Situation in California," vol. 2, 1947.

138 CALIF. FORESTRY STUDY COMMITTEE. 1947. The Forest Situation in California, vol. 2. Report to the Legislature by the Calif. Forestry Study Comm., created by Sen. Res. No. 151, Stat. of 1945. State Printing Office, Sacramento. 57 p. Illus., tables.

Contains data on resources available, including redwood, and general material on forest practices, fire use and control, acquisition of timber land by the State.

139 CALIF. LEGISLATURE. SENATE. INTERIM COMMITTEE ON PUBLIC LANDS. 1952. Hearing [on Forestry] . . . [Sacramento, Calif.]. 2 vols. Nov. 6-8, 1952. Processed.

Hearings between the Senate Interim Committee on Public Lands and the Assembly Committee on Agriculture, the Assembly Subcommittee on Forestry, Grazing and Public Lands, and the State Board of Forestry. Contains testimony on the operation of the Forest Practice Act, redwood forestry and protection by Emanuel Fritz, p. 42-47 of the first day; A. H. Merrill, p. 62-63 of the first day, p. 22-26 of the second day; Henry Trobitz, p. 68-70 of the first day, p. 73-76 of the second day; Gordon Manary, p. 19-22 of the first day; Larry McCollum, p. 51-54 of the first day.

140 CALIF. STATE BOARD OF FORESTRY. 1923. Report to the Legislature on Senate Concurrent Resolution No. 27 (Legislature of 1921), by Edward N. Munns. State Printing Office, Sacramento. 165 p. Illus., tables, maps, biblio.

Resolution No. 27 was concerned with areas "which have been and are being denuded of timber and other vegetable protective covering . . . causing increasing economic loss . . ." to the State. The State Board of Forestry was asked to make this report on the situation and report a plan for reforestation and recovering. The report includes devastation by smelters, over-grazing and lumbering.

The Redwood Region is discussed specifically on p. 83-90: Cutting has been going on since about 1860 and progressing rapidly; logging mostly large-scale, but some small operators of split stuff. Method of logging discussed, particularly in relation to slash disposal, and the subsequent effects on reproduction; when burned the same year as cut, reproduction loss is only 2 or 3%, but there is a 25% loss in the number of stumps that sprout when burned the following years, and Douglas fir comes in. Present cut (1920) and forecasted cut (1950) are given on p. 87.

Tables show: forest statistics in acres: ownership of virgin forest and cutover lands; status of privately owned redwood lands; condition of logged-off lands by owners. There is an extensive bibliography of forest influences.

141 CALIF. STATE BOARD OF FORESTRY. 1914. Study of Redwood Cutover Lands. In *Fifth Bien. Rpt. of the State Forester*, State Printing Office, Sacramento. p. 170-177. Tables.

"The purpose of this study was to determine the conditions which prevail within and adjacent to cutover redwood lands; the approximate extent of this logged-off type, and its susceptibility to improvement and private or public forest management." Tables show area studied, and associated species with the qualities pertaining to their reproduction.

142 CRAPO, HENRY HOWLAND. Papers, 1836-1907. *circa* 12,000 pieces (including 67 volumes). MSS. in University of Michigan, Michigan Historical Collections, Ann Arbor.

These papers of a Michigan governor, land speculator, lumberman, agriculturist and industrialist, also contain extensive correspondence of his son and business agent, William Wallace Crapo, relating to timber lands.

143 FERNOW, BERNHARD EDUARD. Papers, 1885-1922. 2 feet. MS. in Cornell University, Collection of Regional History and University Archives, Ithaca.

Letters concerning the development of professional forestry and forest legislation in the United States. (Not consulted.)

144 FITCH, W. T. 1905. Reclamation of Redwood Lands. *The Northern Crown*. 2:1-6. Sept. 1905. Illus.

An article urging settling of cutover lands in the redwoods and attempting to bring to the notice of the homeseeker the advantages of the redwood belt.

145 FLETCHER, ED. 1952. Memoirs of Ed Fletcher. Privately printed by Pioneer Printers, San Diego, Calif. 751 p. Illus.

Considerable reference to forestry legislation in which Col. Fletcher was interested while a State Senator, 1935-1947. There is also a chapter on his sale of part of the Ward Estate timber in Del Norte County. "Col. Ed" was an important factor in the passage of bills on forestry.

146 FRITZ, EMANUEL. 1950. [Address to County Supervisors' Unit at Redwood Empire Assoc. Meeting.] Calif. Redwood Assoc., San Francisco. 5 p. Sept. 22, 1950.

Address on the Tree Farm movement and its influence on the redwood region community for continued prosperity.

147 FRITZ, EMANUEL. 1946. Features of a Bill by Helen Gahagan Douglas Providing for a Franklin Delano Roosevelt Memorial Redwood Forest. n.p. 3 p. Processed.

Outline of the provisions of H.R. 6201, as presented to the 79th Congress, 2d session.

148 FRITZ, EMANUEL. 1939. Forest Land Situation in the California Redwood Region. Calif. Redwood Assoc., San Francisco. 48 p. Illus., map, tables. Processed.

"Prepared for the California Redwood Assoc. for presentation to the Joint Congressional Committee on Forestry authorized by Concurrent Resolution No. 31, 75th Congress, 1938." Contains brief paragraphs on supplies, production, ownership, cutting practices, selective logging, fire, sustained yield management, depletion and growth, markets, acquisition, parks, taxation, investment, labor, etc. Photographs are of logging in the region, particularly with the use of tractors, loading methods and slash.

149 FRITZ, EMANUEL. 1936. Future of the Redwood Industry. 27th Pacific Logging Cong. *Logger's Daily*. p. 58-60, 62. Illus.

Discussion of parks and groves for recreation, and the forestry effort inaugurated under the lumber code.

150 FRITZ, EMANUEL. 1942. A Proposal for Acquiring Cutover Lands for State Forests. [Berkeley, Calif.] 6 p. Processed.

Address to members of the State Board of Forestry at their meeting on May 8, 1942. [See also E. Fritz, 1943, A Proposed System of State Forests. . . .]

151 FRITZ, EMANUEL. 1943. A Proposed System of State Forest for California to Help Solve Cutover Land and Future Unemployment Problems. *J. Forestry*. 41:162-168. March 1943.

"To accomplish the dual purpose of restoring productivity to California's cutover lands and absorbing some of the shock of post-war unemployment, the author urges a system of state forests created by purchasing one million of California's five million acres of cutover land. First presented by him to the State Board of Forestry in October, 1941 [see E. Fritz, 1941, Redwood Forest Problems . . .] and given its approval, the proposal has met with general favor and a bill to provide initial appropriations is now before the legislature. In this paper the author justifies and describes the proposed program." [See also E. Fritz, 1942, A Proposal for Acquiring Cutover Lands. . . .]

152 GREELEY, WILLIAM B. 1951. Forests and Men. Doubleday & Co., Inc., Garden City, New York. 255 p. Index.

Primarily on policy, with an historical perspective, and with particular emphasis on reforestation and sustained yield management. Contains two specific references to redwood: the cooperative planting program and tree farms.

153 ISE, JOHN. 1920. The United States Forest Policy. Yale Univ. Press, New Haven. 395 p. Index, biblio.

History of legislation affecting forest ownership and forest policy. Fraudulent acquisition of land under the Timber and Stone Act described on p. 74-75; under the Preemption Law and Homestead Act on p. 48, 79-80; concentration of ownership on p. 319-320.

154 JOHNSON, C. RUSSELL. 1954. Permanent Forests and Industries for Mendocino County. *Noyo Chief*, Union Lumber Co., Fort Bragg, Calif. 6:4-5. July 1954.

Also in *Pacific Logger*, 1:8-9, 23, July 1954.

Address at the 16th Redwood Region Logging Conference.

155 KINNEY, J. P. 1917. Development of the Forest Law in America. John Wiley & Sons, Inc., New York. 252 p. Index.

General survey of forest laws, including those of California, up to 1916. No specific reference to redwood, but good statements of protective policies and laws.

156 MUIR, JOHN. 1901. Our National Parks. Houghton Mifflin Co., Boston & New York. (The Riverside Press, Cambridge). 370 p. Illus., index. (1909, new and enlarged ed., 382 p.)

Also the *Manuscript Edition*, Houghton Mifflin Co., Boston & New York, 1915, 400 p.

Brief account of redwood trees and forest, including material on fraudulent acquisition of redwood lands, p. 374-378.

157 PEERY, W. M. 1905. The Denuded Redwood Lands of Mendocino. *The Northern Crown.* 2:16-17. Sept. 1905. Illus.

Essentially a real estate advertisement urging settlers for agricultural purposes.

158 POLI, ADON, and DONALD T. GRIFFITH. 1948. Forest Land Ownership in Northern Mendocino County, California. U.S. Forest Serv. Calif. Forest and Range Expt. Sta., Berkeley. June 1, 1948. 49 p. Maps, tables. Processed. (*Its* Forest Survey Release No. 5.)

Data are on ownership, forest types and timber stands. "All analyses are from basic ownership data obtained for the year 1944."

159 POLI, ADON, and HAROLD L. BAKER. 1954. Ownership and Use of Forest Land in the Redwood—Douglas-fir Subregion of California. U.S. Forest Serv. Calif. Forest and Range Expt. Sta., Berkeley. 76 p. June 1954. Illus., tables. Processed. (*Its* Technical Paper No. 7.)

160 PUTER, S. A. D., and HORACE STEVENS. 1908. Looters of the Public Domain. The Portland Printing House, Portland, Ore. 494 p. Illus.

Chapters 1 and 19 pertain, in part, to the redwood region. The author, indicted for public land frauds, tells how large areas of the public domain were patented. Mentions the names of early timber investors. Tells how he got into the business of fraudulent entries.

161 REED, ANNA MORRISON. 1905. An Editorial. *The Northern Crown.* 2:18-22. Sept. 1905.

Emphasis is on the crops growing on cutover land; mentions some of the early settlers.

162 SAGE, HENRY WILLIAM. Papers, 1837-1930. MSS. in Cornell University, Collection of Regional History and University Archives, Ithaca, N. Y.

As H. W. Sage & Co., later Sage Land & Improvement Co., extensive owner of redwood timber lands. The collection contains correspondence to and from his agents in California (D. P. Simons, D. P. Simons, Jr., and E. J. James), 1904-1916.

163 SCHMUTZ, GEORGE L., EDWIN E. LUNSTEDT, and FREDERICK W. WILHELMI. 1948. Redwood Forest Property Rating and Valuation. Calif. Dept. Nat. Res., Div. of Beaches and Parks [State Printing Office, Sacramento]. Dec. 7, 1948. 12 p. Tables. Processed.

A method of appraising private property for purchase by a public agency. Prepared for use in appraising proposed state parks.

164 U.S. BUR. OF CORPORATIONS. 1913. The Lumber Industry: Part 1, Standing Timber. U.S. Dept. of Commerce and Labor, Bur. of Corp., Wash., D.C. Jan. 20, 1913. 301 p. Tables, index.

Report of the Commissioner of Corporations on the lumber industry. "This Part deals with the amount and ownership of standing timber. It does not treat of combinations in the manufacture or sale of lumber." Covers standing timber, cut, stumpage prices, ownership of timber, fraudulent acquisition of timber, distribution of redwood. "Data obtained by field work from 1907 to early 1910." Good index. (*See also* U.S. Bur. of Corp. 1914. The Lumber Industry; Part 2.)

165 U.S. BUR. OF CORPORATIONS. 1914. The Lumber Industry: Part 2, Concentration of Timber Ownership in Important Selected Regions. U.S. Dept. of Commerce, Bur. of Corp., Wash., D.C. July 13, 1914. 154 p. Tables, maps, detailed index.

Report of the Commissioner of Corporations on the lumber industry. "It is the purpose of Part II to make a more intensive study of the facts [of concentration] as they are found in several of the more important timber regions. The significance of the private control of standing timber thus revealed points to the need of careful consideration to determine the most practical and effective solutions of the public problems involved." Redwood region discussed p. 101-114; some additional references throughout the report. Maps give location of large timber holdings in Del Norte, Humboldt, Mendocino and Sonoma Counties; most of the information contained in this report pertains to these four counties. "Data obtained by field work from 1907 to early 1910." (*See also* U.S. Bur. of Corp. 1913. The Lumber Industry; Part 1.)

166 U.S. CONGRESS. HOUSE. 1946. A Bill to Create the Franklin Delano Roosevelt Memorial Forest. . . . 46 p. April 18, 1946. (79th Cong., 2d session. House. H.R. 6201). [Reintroduced Feb. 7, 1949: 81st Cong., 1st session, House, H.R. 2394.]

The Douglas Bill, proposing a forest extending from the Oregon line into Sonoma County. Four memorial units were provided for, to be administered by the National Park Service; other acquisitions were to be administered and handled as a national forest by the U.S. Forest Service. An initial appropriation of $25 million to be repeated each year until June 30, 1951.

167 U.S. CONGRESS. JOINT COMMITTEE ON FORESTRY. 1940. Forest Lands of the United States. Hearings before the Joint Comm. on Forestry. . . . 75th Cong., 3d sess. [—76th Cong., 3d sess.] on S. Con. Res. 31, a concurrent resolution to establish a Joint Comm. on Forestry. . . . Govt. Printing Office, Wash., D.C., 1939-1940. 2 vols.

Transcript of testimony and statements. Those pertaining to the redwood region are by: Emanuel Fritz, p. 118-122, on the planting program of the 1920's and the switch to selective logging in the 1930's; Otis R. Johnson, p. 813-817; Emanuel Fritz, p. 817-831; A. S. Murphy, p. 831; U.S. Forest Serv., Calif. Region, p. 832-836, on selective cutting and acquisition of redwood for parks; brief statement on saving the redwoods, p. 898.

168 U.S. DEPT. OF JUSTICE. Record Group 60. MSS. in The National Archives, Washington, D.C.

The correspondence and papers pertaining to the protection of the public domain. Included are records on the validity of private land titles antedating addition to the public domain. Scattered materials on unlawful removal of timber, and fraudulent homestead entries.

169 U.S. FOREST SERVICE. 1933. A National Plan For American Forestry. U.S. Forest Serv., Wash., D.C., March 1933. Sen. Res. 175. 2 vols. Index in vol. 2.

The report of the Forest Service of the Agr. Dept. on the Forest problem of the U.S., commonly known as the Copeland Report. Disease Affecting Merchantable Forests (p. 702): Table I gives estimated cull due to decay in the standing saw timber of the U.S. In Western Softwood Stands (p. 860): In the redwood region power logging and severe fires are the causes of severe deterioration. Coast Redwood Forestry (p. 925): The value of individual trees, sizes and species has a very wide range.

170 U.S. FOREST SERVICE. 1947. Summary of the U.S. Forest Service Appraisal of the Economic and Social Effect of the Proposed Roosevelt Redwood Forest. Wash., D.C. 17 p. Processed.

The Douglas Bill, H.R. 6201. "This summary consists of the opening pages of the official appraisal, wherein the purposes of the study are set forth and the data and conclusions are summarized." Submitted in 1946.

171 U.S. FOREST SERVICE. 1920. Timber Depletion, Lumber Prices, Lumber Exports and Concentration of Timber Ownership, 2d ed. U.S. Forest Serv., Wash., D.C. 73 p. June 1, 1920. Tables.

Report on Senate Resolution 311, the Capper Report. On p. 23 the stand of redwood is given as 72,208,000,000 b. f. On p. 64 there is a brief resumé of timber ownership in California: "In the redwood region the principal non-operating owners are now 17 in number, with holdings ranging from 200 million to 5 billion board feet of timber. . . . The principal operators in the same region are 13 in number, with timber holdings ranging from 240 million to 3 billion feet. Six of these companies have holdings of 1 billion feet or more, and the aggregate ownership of the 13 is about 20 billion feet. A large part of the redwood stumpage that can be operated most economically is now controlled by operating companies, who also control strategic operation sites from the standpoint of coastwise and other shipments." Table gives depletion of timber reserves and net changes in timber ownership of large timber owners.

172 U.S. FOREST SERVICE. CALIF. FOREST AND RANGE EXPERIMENT STATION. 1940. The Forest Problems of California. Berkeley, Calif. 27 p. Tables. Processed.

A general resumé of the problems of forestry on both public and private lands, with reference to the economy of the state and the industry. Several references to the redwood region, particularly for resources and growth.

173 U.S. PUBLIC LANDS COMMISSION. 1880. Report of the Public Lands Commission. Govt. Printing Office, Wash., D.C. 690 p. Tables, maps. (46th Cong. 2d sess. House. Ex. Doc. 46. Serial No. 1923.)

Also in *The Public Domain* by Thomas C. Donaldson, Govt. Printing Office, Wash., D.C., 1884.

Concerns the taking up of land under the Homestead and Timber and Stone Acts; the Commission visited the redwood region and saw little huts or kennels built to create the impression the land was being settled. Also contains testimony on timber by various individuals, including references to the redwood region.

174 WEBER, ARNOLD N. 1926. Redwood Cutover Lands and Their Use. [Berkeley, Calif.] 1926. 64 p. Tables, map, biblio. Processed.

Thesis (M.S.) — Univ. of Calif. May 1926.

Also in *Timberman*, 27:178, 180, 182, June 1926; 27:172, Dec. 1925. ". . . the study embraced the gathering of data for the compilation of a redwood cutover land map, ascertaining the present status of agriculture on the cutover land, the possibilities of grazing stock upon it, and to determine whether or not the land is best suited to the growing of timber." Contains material on the cost of land clearing and reforestation.

175 WOODMAN, STANLEY. 1949. Self Police? or Government Control? *Redwood Region Logging Conf. Bul.*. Brizard-Matthews Machinery Co., Eureka, Calif., p. 2.

Concerns the Douglas Bill.

TAXATION

176 BERRY, SWIFT. 1924. Problems Involved in Taxation of Cutover Land and Second Growth Timber in California. Calif. Forest Protective Assoc., San Francisco, March 17, 1924. Circ. No. 5. 5 p. Tables. Processed.

Area of cutover land in the redwood region is given as 483,000 acres; the area of privately owned land as 1,047,000 acres. Discussion of reforestation programs and the effect upon them of taxation.

177 FRITZ, EMANUEL. 1952. Forest Taxation. [Calif. Univ. School of Forestry, Berkeley.] 4 p. Processed.

An address before the North Coast Forest Forum at Eureka, Calif., April 18, 1952.

178 LOOMIS, EDWARD W. 1954. A Study of Forest Taxation on Second Growth Timber and Lands in Humboldt County. n.p. November 1, 1954. 14 p. Biblio. Processed.

Analysis of various reports on forest taxation. Also suggestions regarding revision of tax laws and further study of the problem.

179 SCHOFIELD, W. R. 1932. Report on Timber Taxation in the State of California Submitted to the California Tax Research Bureau. n.p. Nov. 1, 1932. 56 p. Tables. Processed.

Brief general comments as to assessment, delinquency, appraisals, and timber as an investment. Each county treated separately; redwood region counties, p. 14-17. Tables on acreage, valuation, ratios, and average selling price of lumber per M.b.f. (1921-1931).

REFERENCE WORKS

BIBLIOGRAPHIES, HANDBOOKS.

180 BRUNCKEN, ERNEST. 1908. A Bibliography of Forestry in California. Calif. State Board of Forestry. Circular No. 3. Supt. of State Printing, Sacramento. 16 p.

Compiled in the California State Library. Contains references to redwood.

CALIFORNIA REDWOOD ASSOCIATION. 1934+ Redwood Data Book. *See* **1619.**

181 CROW'S BUYER'S AND SELLER'S GUIDE OF THE WESTERN LUMBER INDUSTRY. 1955. Crow Publications, Portland, Ore. 505 p.

A directory of lumber manufacturers revised periodically. Includes also producers of shingles, plywood, sash, doors and frames, specialties, piling and poles; remanufacturing plants; wood preserving plants; wholesale and commission lumber dealers.

182 FREEMAN, JOS. F. 1888. Pacific Bank Handbook of California. Pacific Bank. San Francisco.

Importance of the lumber industry in California, redwood lumbering and commercial value of redwoods in California. Petrified Forest near Calistoga, p. 68.

183 FRITZ, EMANUEL, and GEORGE W. SMITH. 1935. A Bibliography on California Coast Redwood (Sequoia Sempervirens). Calif. Dept. of Nat. Res. Div. of Parks. 200 p. Processed.

An annotated bibliography "based on books, pamphlets, reports, periodicals and newspapers in the libraries of the University of California . . . executed and accomplished through SERA Project 3-P2-165 . . . under the direction of Prof. Emanuel Fritz, Div. of Forestry [and] George W. Smith, Supervisor." Arranged by type of publication: Books, etc., p. 1-23; Periodicals, p. 24-91; Newspapers, p. 92-200.

184 FRITZ, EMANUEL, and GEORGE W. SMITH. 1937. A Bibliography on the Bigtrees of California (Sequoia Gigantea). Univ. of Calif., Berkeley. 474 p. Processed.

"With annotations of literature reviewed, based on books, pamphlets, reports, periodicals and newspapers in the libraries of the University of California . . . executed and accomplished through WPA Projects 2466, 6699 and 7062. . . . George W. Smith, Project Supervisor, under the direction of Prof. Emanuel Fritz, Div. of Forestry."

185 GARDNER, ROBERT A. and KENNETH E. BRADSHAW. 1954. Characteristics and Vegetation Relationships of Some Podzolic Soils Near the Coast of Northern Calif. *Soil Science Society of America Proceedings.* 18(3):320-325. July 1954. Illus.

Survey of the soils of wild lands in Mendocino County. Morphological, chemical and physical characteristics of three soil series: Blacklock, Noyo, Caspar. Podzolic soils.

186 THE LUMBERMAN. 1956. Handbook and Directory of the Western Forest Industries. Miller Freeman Publications, Inc., Seattle, Wash., 1956.

A directory revised annually giving names, addresses, locations, production and officers of logging, milling, wood preserving, and plywood companies.

186a MUNNS, E. N. 1940. A Selected Bibliography of North American Forestry. U. S. Dept. of Agr. Misc. Pub. No. 364. Washington, D.C. 2 vols. 1142 p. June/Sept. 1940.

Classified by broad subjects and subclasses. Not annotated. No subject index. Author Index appears in Vol. II.

187 NEIDERHEISER, CLODAUGH. 1956. Forest History Sources of the U.S. and Canada. Forest History Foundation, Inc., St. Paul, Minn. 1956. 123 p. Processed.

An annotated list of manuscripts pertaining to lumbering and forestry. Lists states and the libraries in which they are placed.

188 REHDER, ALFRED. 1949. Bibliography of Cultivated Trees and Shrubs. Arnold Arboretum of Harvard Univ., Jamaica Plain, Mass. 825 p. Index.

Lists references to the classification of the genus *Sequoia* and species, including *S. sempervirens* and the sub-varieties *adpressa, albo-spica, glauca* and *pendula.*

189 REVEAL, JACK, and ARNOLD F. WALLEN. 1948. The Redwood Forest Handbook. Dept. of Natl. Resources. Div. of Forestry, Sacramento? 160 p. Illus., tables.

Data assembled as a practical guide and reference book for woodsmen in the redwood region. Sections on: The Tree; The Forest; Forest Protection; Slash Disposal; Cruising; Scaling; Sales Contracts. Appendix contains 56 tables for volumes, log scales, etc.

190 SAVE-THE-REDWOODS LEAGUE. 1935. Bibliography of the Redwoods. Save-the-Redwoods League, Berkeley. 16 p. Illus.

For the general reader. Includes selections in botany, the Save-the-Redwoods movement, travel and recreation, redwood forestry and lumber, the name Sequoia, and redwoods in poetry.

191 THE TIMBERMAN. 1950. Forest Products Industry Directory of Western North America. *Timberman.* Portland, Ore. 1950.

A directory of lumbering and related operations in the Western U.S. and Canada. Revised from time to time. Redwood operators listed.

192 U.S. DEPT. OF AGRICULTURE LIBRARY. 1942+ . . . Bibliography of Agriculture, 1942 to Date. Govt. Printing Office, Wash., D.C. 1942—. 19+ vols.

Includes section on Forestry. Published as a monthly classified list covering U.S. and foreign countries. Annual Index.

193 U.S. FOREST SERVICE. CALIF. FOREST AND RANGE EXPERIMENT STATION. 1939-1941. Bibliography of Early California Forestry. Berkeley, Calif. 69 vols. Maps.

This fully annotated bibliography was prepared with assistance of workers assigned by W.P.A. on Project Nos. 70-10896 and 70-12132; it is arranged in volumes alphabetically by counties. Sources for the material are from newspapers, periodicals, pamphlets, and books, including diaries of early explorers. Each county contains the following sections, within which the material is arranged chronologically (most sections include publications through 1920): 1, Fires; 2, Indian Burning; 3, Lumbering Operations; 4, Other Forest Utilization Operations to 1920; 5, Shipments and/or Consumption; 6, Standing Timber; 7, Vegetation. The following counties have material on redwood: Alameda, vol. 1; Contra Costa and Del Norte, vol. 8; Humboldt, vols. 13-18; Marin, vol. 23; Mendocino, vols. 25-28; Monterey, vol. 30; San Mateo, vols. 48-49; Santa Clara, vol. 50; Santa Cruz, vols. 51-53; Sonoma, vols. 61-62; in addition, vol. 43 is on the Redwood Belt, and vols. 31-34 are on the National Forests.

REPORTS, CONFERENCES, PROCEEDINGS, SERIALS

194 ANON. 1953. Financial, Forestry, Protection and Safety Problems Discussed at Redwood Region Logging Conference. *Timberman.* 54:54-58. July 1953. Illus.

Condensation of the proceedings of the 15th meeting.

195 ANON. 1953. First Junior Logging Conference. *Timberman.* 54:148. June 1953. Illus.

Description of the first Redwood Region Junior Logging Conference, sponsored by the Redwood Region Conservation Council, and attended by 70 high school students at Mendocino Woodlands camp near Fort Bragg, Calif.

196 ANON. (George Craig?) 1954. Junior Logging Conference Presents Practical View of Forest Practices. *Timberman.* 55:106. July 1954.

Brief description of the 2d annual Redwood Region *Junior* Logging Conference.

197 ANON. 1940. Logging Operators Meet. *Timberman.* 41:24, 26, 28, 30. May 1940. Illus. Also in *West Coast Lumberman* [*Lumberman*]. 67:46, 57. June 1940.

Report of the Fourth Redwood [Region] Logging Conference. Subjects include bark peeling, breakage, tractors and trucks, scaling.

198 ANON. 1950. Logging Problems of the Redwood Region. *Timberman.* 51:36-41. July 1950.

Condensation of the proceedings of the 12th Redwood Region Logging Conference.

199 ANON. 1955. Over 600 at 17th Redwood Region Logging Conference. *Calif. Lumber Merchant.* 34:21-23, 48-50. July 1, 1955. Illus.

A news release on the R.R.L.C., giving excerpts from the discussions; theme for the Conference was "Timber Management Techniques for Permanence."

200 ANON. (C. G. Sturm.) 1955. Redwood Junior Logging Conference. *Pac. Logger.* 2:12-13. June 1955. Illus.

Press write-up with 12 photographs depicting Conference activities.

201 ANON. 1942. Redwood Loggers. *West Coast Lumberman* [*Lumberman*]. 69:29-32. June 1942. Illus.

Report on the sixth Redwood [Region] Logging Conference.

202 ANON. (George F. Cornwall.) 1939. Redwood Logging Conference; Theme: Selective Logging Methods. *Timberman.* 40:30-32, 34. May 1939. Illus.

Account of the third Redwood [Region] Logging Conference. Subjects include: bark peeling, combination of tractors and high-lead, selective logging, accelerated growth after release.

203 ANON. 1942. Redwood Logging Conference. *Timberman.* 43:42, 44, 46. June 1942. Illus.

Report on the sixth Redwood [Region] Logging Conference.

204 ANON. 1948. Redwood Logging Conference. *Timberman.* 49:66, 68, 70, 72, 74. July 1948. Illus.

Report of the 10th Redwood [Region] Logging Conference.

205 ANON. 1948. Redwood Logging Conference to Take in Fir Loggers.

West Coast Lumberman [*Lumberman*]. 75:70, 73-76, 110. July 1948. Illus.

Report of the proceedings of the 10th Redwood [Region] Logging Conference.

206 ANON. (Stuart Leete.) 1939. Redwood Operators' Conference. *West Coast Lumberman* [*Lumberman*]. 66:20-21, 74-75. June 1939. Illus.

Report of the third Redwood [Region] Logging Conference. Subjects include selective logging, bark peeling, fire protection, high-lead logging.

207 ANON. 1924. Special Saw on Exhibition. *Amer. Lumberman.* 2568: 52. Aug. 2, 1924.

Twenty-four foot saw used to saw down a giant tree to be exhibited at the Philadelphia Exposition in 1896.

208 ANON. 1954. Utilization, Safety, New Equipment Talked at Redwood Region [Logging] Conference. *Timberman.* 55:59-60, 64, 93-94. July 1954. Illus.

Proceedings in brief of the 16th annual Conference.

209 CALIF. REDWOOD ASSOC. 1950+ Press and Periodical Digest. Calif. Redwood Assoc., San Francisco. [1 p. each.] Processed.

Sheet containing short items of interest to the redwood industry, such as lost logs, timber sales, labor news, personnel, and reading notes; taken from various newspapers and periodicals. Released every 3 or 4 days. (Listed here as additional source material).

210 CALIF. STATE BOARD OF FORESTRY. 1921. Eighth Biennial Report of the State Board of Forestry. State Printing Office, Sacramento. 64 p.

An interesting report in that it reports the testimony given at a meeting of the State Board and redwood lumbermen.

211 CALIF. STATE BOARD OF FORESTRY. 1914. Fifth Biennial Report of the State Forester. State Printing Office, Sacramento. 202 p.

This report stresses fire protection and a cutover land study. One section gives the history of forest legislation in Calif.

212 CALIF. STATE BOARD OF FORESTRY. 1906. First Biennial Report of the State Forester. State Printing Office, Sacramento. 39 p.

A general report which mentions creation of Board in 1885, its abolishment in 1893 and its re-creation in 1903, p. 13; tells how state lands were sold, p. 14; and of the planting of eucalyptus in cutover lands by Union Lumber Co., p. 24.

213 CALIF. STATE BOARD OF FORESTRY. 1892. Fourth Biennial Report of the State Board of Forestry. State Printing Office, Sacramento.

Contains: the text of the law setting up a State Board of Forestry in 1883, and its amendment in 1887; text of bill providing for protection; article "What is Forestry," by B. E. Fernow, p. 62; statistician's report, p. 51; data on forest resources of Humboldt County, area, cutover, shipments, mills.

See also First Biennial Report of the State Forester, 1906, p. 13, on abolishing the Board in 1893 and its re-creation in 1905.

214 CALIF. STATE BOARD OF FORESTRY. 1912. Fourth Biennial Report of the State Forester, by G. M. Homans. State Printing Office, Sacramento. 148 p.

Brief account of the Redwood Fire and Protective Association, p. 14. Under "Forest Taxation," assessed valuations given for various counties, p. 72-83.

215 CALIF. STATE BOARD OF FORESTRY. 1923. Ninth Biennial Report of the State Board of Forestry. State Printing Office, Sacramento. 73 p. Illus., tables.

Contains: Forestry in the Redwood Region, which is a transcript of a meeting held March 10, 1922, attended by the Calif. State Board of Forestry and members of the Calif. Redwood Assoc.; includes material on forestry developments in the redwood region, second-growth, reforestation, taxation (yield tax), and historical data; p. 7-26. Humboldt Redwood Park, by S. H. Williams, a brief account of the purchase and preparation of the Park for recreational purposes, p. 62-64. Gives the redwood timber resource as 85 billion bd. ft., p. 30. Seasoning studies, p. 33.

216 CALIF. STATE BOARD OF FORESTRY. 1886. Report of the Engineer, by Hubert Vischer. In *(First) Bien. Rpt. of the Calif. State Bd. of Forestry, 1885-1886.* State Printing Office, Sacramento. p. 135-157, 191-209. Tables, maps.

Part 2, The Redwoods. Sections are titled as follows: Description of the belt, extent and character, p. 137-139; Redwood resource and the redwood cut, p. 140-148; The Efficiency of redwood logging and manufacture as an art, p. 149-151; The Reproductive capacity of redwood, p. 152-157. Tables include figures on resources and consumption, primarily.

Part 4, Causes and Results of Forest Destruction. Sections are titled as follows: The Redwood lands, p. 191-192; Forest fires, p. 197-201; A Study of the incipient climatic change notable in Humboldt County: The Influence of redwood forests upon the flow of streams, p. 202-205; The Operation of existing laws upon our forests: Their influence upon the lumber producing industry, p. 206-209.

217 CALIF. STATE BOARD OF FORESTRY. 1886. Reports [on various counties] to the Secretary. In *(First) Bien. Rpt. of the Calif. State Bd. of Forestry, 1885-1886.* State Printing Office, Sacramento. p. 15, 17-19, 27, 64.

Brief estimates on cut and remaining stand, primarily. Monterey County by M. L. Dexter, p. 15; Santa Cruz County by S. L. Williams, p. 17-18; Sonoma County by J. B. Armstrong, p. 19. Description of redwood on p. 64.

218 CALIF. STATE BOARD OF FORESTRY. 1888. Second Biennial Report of the State Board of Forestry. State Printing Office, Sacramento. 182 p. Illus.

A compilation of separate reports, the principal one being by the botanist. A letter on fire in Humboldt Co., p. 25.

219 CALIF. STATE BOARD OF FORESTRY. 1919. Seventh Biennial Report of the State Forester. State Printing Office, Sacramento. 103 p.

Fire protection in the redwoods as reported to the State Forester in a questionnaire, p. 43; data on fires, p. 11; data on fires by counties, p. 14; forest distribution, p. 59; The Redwood (descriptive), by C. W. McCann, p. 71-72.

220 CALIF. STATE BOARD OF FORESTRY. 1916. Sixth Biennial Report of the State Forester. State Printing Office, Sacramento. 56 p.

Includes a very brief report on the Redwood Fire Protective Assoc., Fort Bragg.

221 CALIF. STATE BOARD OF FORESTRY. 1890. Third Biennial Report of the State Board of Forestry. State Printing Office, Sacramento.

Trade: increasing of redwood exports, popularity of the lumber in the eastern United States, and danger of early exhaustion, p. 8-9; Redwoods: their ancestors of the Miocene and Pliocene periods, qualities of redwood, origin of the name Sequoia, lumber prices, distribution of the trees, size, etc., p. 157-169.

222 CALIF. STATE BOARD OF FORESTRY. 1910. Third Biennial Report of the State Forester, by G. M. Homans. State Printing Office, Sacramento. 160 p. Tables, maps.

The coast zone (central Monterey northward) is described for climate, soil, topography, cover types, p. 18-22. Botanical description of the tree, reproduction, and lumbering methods; includes tables on second-growth showing merchantable yield per acre, pile length, merchantable volume of timber, p. 37-41. Under forest protection, fire and methods of control in the Redwood Belt is described, p. 79-83. Under tree planting, the use of redwoods as ornamentals is discussed, p. 114, 124-125.

223 CALIF. WORLD'S FAIR COMMISSION. 1894. Final Report of the California World's Fair Commission. State Office, Sacramento. 240 p.

Including description of the redwood exhibits—cross sections, boards, burls.

224 FRITZ, EMANUEL. 1937. Proceedings, Second Redwood [Region] Logging Conference. Calif. Redwood Assoc., San Francisco. 8 p. June 11-12, 1937. Processed.

Also in *West Coast Lumberman* [*Lumberman*] 64:22-23, 36, 80-81, July 1937, with title "Redwood Problems" (by Sam Hawkins). Illus.

Gives the attendance and substance of the discussions on bark peeling, logging costs, and fire policy.

225 HUMBOLDT COUNTY TIMBER RESOURCE CONFERENCE. 1955. Report of First . . . Conference. Calif. Agr. Ext. Serv., Eureka, Calif. 9 p. Processed.

Brief outline of a meeting held in Eureka on March 26, 1955. More than one hundred attended an all-day session. In the morning general talks were given. For the afternoon the group was divided into four sections and each section was given the same list of seven questions to be discussed and answered. Committee reports were further discussed in a general meeting in the evening.

226 LUMBERMAN. 1889+ The Production Journal of the Forest Products Industries. Miller Freeman Publications, Inc., Seattle, Wash.

A monthly lumber trade journal, formerly known as *West Coast Lumberman*. Contains numerous articles and news notes on the redwood industry, personnel, necrology, plant descriptions, log and lumber prices, and production statistics.

227 NOYO CHIEF. 1949+ [A publication of . . .] Union Lumber Co., Fort Bragg, Calif. v.p. vol. 1, No. 1. Jan. 1949. Illus.

House organ, published monthly. Contains news of Company operations, personnel; occasional special issues. Very well illustrated. Note: Articles of special interest have been cited separately.

228 PACIFIC LOGGER. 1953+ [A publication of the Northern California lumber industry. . . .] Eureka, Calif. vol. 1, No. 1. Oct. 1953. v.p. Illus.

"The Northern California lumber industry publication—devoted to promotion of the welfare and continued prosperity of this industry." Articles include material on resource, logging, milling, conferences, and company operations of the redwood and Sierra-Cascade lumber regions. Published monthly.

229 PACIFIC LOGGING CONGRESS. 1941+ Loggers Handbook. Portland, Ore. v.p. Illus.

"Papers prepared for . . . distribution at the . . . Pacific Logging Conference." Each annual volume contains papers based upon a central theme: vol. 1, Truck Logging; vol. 2, Maintenance of Equipment; vol. 3, Surveying and Cruising; vol. 4, Truck Roads and Logging; vol. 5, Sustained Yield; vol. 6, Mechanics in Logging; vol. 7, Log Transportation; vol. 8, Loading Logs; vol. 9, Fortieth Anniversary; vols. 10-11, no title; vol. 12, The Logger and His Timber; vol. 13, Logging Machinery; vol. 14, Log Transport; vol. 15, Logging for Maximum Utilization.

230 PACIFIC LOGGING CONGRESS.

1910+ [Proceedings of the . . .] Portland, Ore. v.p. Illus.

The proceedings contain articles and discussion on general topics, and specific sections on the redwood region. Proceedings for the following years were published individually: 1910-1926, 1939-1940, 1946-1948, 1953-1954; proceedings for the following years appeared in the *Timberman*: 1941, 1943-1945, 1949-1952. Note: Many of the articles specifically on the redwood region have been cited separately.

231 REDWOOD LOG. 1948+ [A publication of . . .] Hammond Lumber Co., Samoa, Calif. v.p. vol. 1, No. 1. Jan. 1948. Illus.

House organ, published monthly. Contains news of the operations of the Company and its personnel. Occasional semi-technical articles. Note: Articles of special interest have been cited separately.

232 REDWOOD LOGGING CONFERENCE. 1936-1948. Proceedings of Annual Meetings. Processed and printed. Bound. Only available copies for each meeting are in the Forestry Library, Univ. of Calif., Berkeley.

In 1949 the name of the conference was changed to Redwood Region Logging Conference. The volumes contain programs, resumés of discussions, occasional papers, clippings from lumber trade press and local newspapers reporting the meetings and discussions and supplementing the secretary's resumés.

Subjects discussed at the various conferences were:

1st, Feb. 14-15, 1936—Tractor logging, tractor as a high-lead machine; maintenance; planning; truck hauling; selective cutting; slash disposal; fire protection.

2d, June 11-12, 1937—Bark peeling, problems and solution; tractor yarding cost influences.

3d, May 5-6, 1939—Tractor yarding organization; selective cutting.

4th, May 10-11, 1940—Bark peeling; felling breakage; log inventorying; tractors; scaling; bucking; trucking; winter logging; fire weather; selective cutting.

5th, May 23-24, 1941—Bark peeling; felling breakage; log scaling and grading; selective cutting; power saws; fire weather forecasting; slash disposal.

6th, May 22-23, 1942—Bark peeling; timber stand analysis; felling breakage; slash burning; fire weather forecasting; torque converters; equipment maintenance.

7th, May 28-29, 1943—Log storage, planning operations, bark peeling; double drum tractors; electric chain saws; fire protection; trucking restrictions; torque converters.

8th, May 26-27, 1944—Combined felling, bucking and peeling; slash disposal; power saws; small operators' problems; pre-loading logging trucks; future of the logging conference. Papers: Financial aspects of holding cutover lands for livestock management, by R. L. Adams; Financial aspects of holding cutover land for timber growing, by E. Fritz.

9th, May 25-26, 1945—Bark peeling; prize competition plan; new state laws; selective cutting development; trucks and truck logging; fire protection; Diesel yarders. Introductory address by Kenneth Smith.

10th, May 28-29, 1948—Road building; re-logging possibilities; reduction of logging losses; ripping rotten-center logs; fire protection; bark peeling; State Forest Practice Act; Douglas fir industry; radio.

233 REDWOOD REGION CONSERVATION COUNCIL. 1952+ Conservation for Today. Redwood Region Conserv. Council, San Francisco. vol. 1, No. 1. Summer 1952. Illus.

A quarterly review of the activities of the R.R.C.C. with articles on redwood forestry, fire protection, Junior Logging Conference.

234 REDWOOD REGION LOGGING CONFERENCE. 1949-1955. Proceedings of Annual Meetings. Processed and printed. Bound.

Except for 1949, only available copy for each meeting in the Forestry Library, Univ. of Calif. For the year 1949 (11th meeting) all papers were assembled in one processed volume and given wide distribution.

Before 1949 known as the Redwood Logging Conference.

The volumes contain programs, resumés of discussions, occasional papers, clippings from lumber trade press and local newspapers reporting the meetings and discussions, and supplementing the secretary's resumés. A separate entry giving the subjects covered has been made for each year.

235 REDWOOD REGION LOGGING CONFERENCE BULLETIN. 1948+ [A publication of . . .] Brizard-Matthews Machinery Co., Ukiah, Calif. v.p. Illus.

Bulletin issued annually and coincides with the Redwood Region Logging Conference. Contains brief articles, non-technical in character; primarily a trade publication offered as a souvenir program. (1948 edition under title "Brizard's Bulletin") Note: Articles of special interest have been cited separately.

236 SIMPSON LOOKOUT. 1946+ [A publication of . . .] Simpson Logging Co. [Shelton, Wash.] v.p. Illus.

House organ, published monthly. Contains news of the California operations of the Company. Well illustrated. Note: Articles of special interest have been cited separately.

237 SOC. OF AMER. FORESTERS. NORTHERN CALIF. SECTION. 1954. Report [Final] of the Subcommittee on Experimental Forests and Pilot Plants — Redwood Region. Dec. 1954. 5 p. Processed.

An evaluation of existing experimentation and recommendations regarding the development of an adequate program.

238 THE TIMBERMAN. 1899+ An International Lumber Journal. *Timberman.* Portland, Ore. 1899+.

A monthly lumber trade journal founded in 1899 by George Mackie Cornwall. Contains numerous news notes on redwood industry, personnel, necrology, production statistics, lumber and log prices, and some signed articles. Note: Articles of special interest have been cited separately.

239 WESTERN CONSERVATION JOURNAL. 1943+ Juanita R. Gallaher, pub., Seattle, Wash.

A bi-monthly journal specializing on forests, soil and water. Reports forestry and lumbering convention proceedings; and includes news notes; occasional articles and special issues on redwood.

COAST REDWOOD IN FICTION AND POETRY

240 ANDERSON, KENNETH. 1929. Monarch of the Forest. *Overland Monthly.* 87 (ser. 2): 11-12. Jan. 1929. Illus.

Story of an isolated redwood in southern Oregon: a sentimental timber cruiser finds it, and to avert the fate of the tree, cuts a large root which was exposed by erosion, causing it to be felled by natural causes; it breaks and is thereby "saved" from an ignominious end.

241 ARMER, LAURA ADAMS. 1939. Farthest West. Longmans, Green & Co., New York. 190 p. Illus.

Fiction for children, with a setting in the redwoods and a "Save-the-Redwoods" theme.

242 BLAND, HENRY MEADE. 1928. Under the Redwoods. *Overland Monthly.* 86 (ser. 2): 54. Feb. 1928.

Poem.

243 CHENEY, JOHN VANCE. 1911. At the Silver Gate. Frederick A. Stokes Co., New York. 94 p. Illus.

Includes three poems: "The Voice of the Sequoia," p. 15-19; "Sunset in the

Redwoods," p. 47; "The Redwoods Fairy," p. 55-56.

244 COBLENTZ, STANTON A. 1933. Sons of the Redwoods and Other Poems. Overland - Outwest Publishers, Los Angeles and San Francisco. 77 p.

Poems.

245 GILL, TOM. 1939. Firebrand. Farrar & Reinhart, Inc., New York and Toronto. 309 p.

Fiction, with a locale in Mendocino County redwoods. Rather accurate descriptions of lumbering methods; overdrawn as to forest fire and method of fighting it. The hero plans to log his timber selectively.

246 GRANT, JOSEPH D. 1925? Redwood Radio: A Reverie. Save-the-Redwoods League, Berkeley. [14] p. Illus.

A fantasia, recalling the stirring historical events during the lifetime of a redwood.

247 GREGORY, JACKSON. 1928. Redwood and Gold. Dodd, Mead & Co., New York. 306 p.

A novel concerning a ranch which is the suspected site of a rich gold mine. The setting is the redwood region, probably Humboldt Co.

248 HASTINGS, CRISTEL. 1941. Sequoias. *Amer. Forests.* 47:156. April 1941.

Poem.

249 KEELER, CHARLES AUGUSTUS. 1919. Sequoia Sonnets. Pub. at the Sign of the Live Oak, Berkeley, Calif. 113 p.

Poetry.

250 KELLOGG, E. LINCOLN. 1897. A Redwood Story: The Courting of an Ox Driver. *Overland Monthly.* 29 (ser. 2): 40-44. Jan. 1897.

A vivid description of the fall of a Coast redwood on p. 42.

251 KYNE, PETER B. 1918. The Valley of the Giants. Grossett & Dunlap, New York. 388 p.

Fiction, based on William Carson of Dolbeer & Carson Lumber Co., Eureka, Calif., and his exploits, and those of others in Humboldt County. In part based on celebrated contest between Carson and John Vance in the building of a logging railroad.

252 LEAVER, J. M. 1929. Song of the Giant Redwood. In *Scotia, Home of Redwood,* The Pacific Lumber Co., Scotia, Calif. 2 p. Illus.

A 6-stanza poem, written as though the redwood were speaking.

253 MARKHAM, EDWIN. 1914. California the Wonderful. Hearst's Internatl. Library Co., New York. 400 p. Index.

Poetical description of redwood, including his poem "A Mendocino Memory," p. 273-279. The poem is also in his collection "Lincoln and Other Poems": McClure, Phillips & Co., New York, 1901, p. 16-20; Doubleday, Page & Co., New York, 1916, p. 16-20.

254 MILLER, FANNIE de C. 1895. In the Redwoods. Frank Eastman & Co. Printers, San Francisco. 20 p. Illus.

Poem of 88 lines read "before S. F. Sorosis, Redwood Day, April 1, 1895."

255 OVER, C. H. 1947. California Redwoods. [Published by author.] Duarte, Calif. 25 p. Illus.

Poems.

256 PASCAL, SISTER M. 1940. Sequoia Sempervirens. *Nature Mag.* 33:336. June-July 1940.

Poem.

257 PATTERSON, VERNON. 1939. Wise As a Goose; A Novel of the California Redwood Country. Lymanhouse, Los Angeles. 360 p.

Fiction, with a locale in Humboldt County. Contains much detailed and authentic description of lumbering methods, from felling to milling, and the conditions and characters are good samples of the time.

258 SCURLOCK, CONSTANCE. 1930. To the Redwoods. *Noyo Chief,* Union Lumber Co., Fort Bragg, Calif. 4:11. Sept. 1952.

Poem.

259 SHIELDS, CLARA McGEORGE. 1923. Redwoods and Buttercups. [Eureka, Calif.] 4 p. Illus.

Poetry.

260 SILL, EDWARD R. 1917. Among the Redwoods. In *Poetical Works,* Houghton, Mifflin & Co., Boston and New York. p. 341-343.

Poem.

261 STERLING, GEORGE. 1911. Beneath the Redwoods. In *The House of Orchids and Other Poems,* A. M. Robertson, San Francisco, Calif. p. 58-59.

Poem.

262 WHITMAN, WALT. 1926. Song of the Redwood-Tree. In *Leaves of Grass,* Doubleday, Page & Co., Garden City, New York. p. 175-178.

Poem. (Note: Also in other editions of "Leaves of Grass.")

HISTORY OF COAST REDWOOD AND THE REDWOOD REGION

DISCOVERY AND ACTIVITIES (Mostly before 1900. See also HISTORY under specific classification in the Subject Index.)

263 ANON. 1903. California and the Pacific Northwest. *Amer. Lumberman.* 1461:26B-26C. May 23, 1903. Illus.

News notes of the redwood belt, including railroad building, mills, shipping, lumber orders, and personal notes.

264 ANON. 1902. From Lumbering to Horticulture. *Overland Monthly.* 39 (ser. 2): 579-594. Jan. 1902. Illus.

Subtitled: A Study in mountain economics in Santa Cruz County. A popularly written article dealing with redwood on p. 587-589; states that stripping of the redwood from the interior valleys was "simply an inevitable commercial necessity" without which the area would still be a wilderness. Now (1902) the county faces a transition to agriculture, but makes a plea for the preservation and purchase of the Big Basin area.

265 ANON. 1883. History of Alameda County, Calif. Pub. by M. W. Wood, Oakland. 1001 p.

In Brooklyn township, on p. 412: "In what may be termed the pre-American days there was one belt of redwoods which was known by the name of San Antonio, and where the production of lumber was carried on to a great extent. To-day [1883] the site of the forest is to be recognized only by the gnarled stumps of trees, with shoots springing therefrom. These were the only forest-trees in the county, save the usual clusters of oaks. . . ."

266 ANON. (S. L. Everett.) 1897. Mendocino County and the Lumber Industry. *Pac. Coast Wood & Iron* [*Pioneer Western Lumberman*]. 27:59.

Article by the editor giving a good general description of the Redwood Belt, and a brief history of mill development.

267 ANON. 1931. The Petrified Forest of California. Carnegie Inst. of Wash. *News Serv. Bul., School Ed.* 2:102-104. April 5, 1931. Illus.

Description of the petrified Sequoias in the foothills of Mt. St. Helena, near Santa Rosa, Sonoma County, including "The Monarch of the Forest."

268 ANON. 1869. A Week in Mendocino. *Overland Monthly.* 3:282-289. Sept. 1869.

A popularly written article referring to the redwood, on p. 286, as an area where the axe had not yet penetrated (Arcata region).

269 ALTIMIRA, JOSÉ. 1823. Journal of a Mission-Founding Expedition North of San Francisco in 1823. *Hutchings' Calif. Mag.* 5:58-62; 115-119. Aug./Sept. 1860.

Translation of the journal of the founder of the Mission of Sonoma. On June 27 he mentions redwoods in Sonoma, p. 60; on July 4 mention is made of a cross "provisionally made of redwood," p. 118.

270 BEECHEY, FREDERICK W. 1831. Narrative of a Voyage to the Pacific and Beering's Strait . . . 1825-1828. H. Colburn and R. Bentley, London. 2 vols.

Captain Beechey noted Coast redwood, near San Jose: ". . . a thick wood, named Palos Colorados from its consisting of red cedar pine . . . ," p. 42, vol. 2. (*See also* W. J. Hooker "The Botany of Capt. Beechey's Voyage.")

271 BELL, HORACE. 1881. Reminiscences of a Ranger; or, Early Times in Southern California. W. Hebberd, Santa Barbara, Calif., 1927. 499 p.

Mentions the use of redwood pickets for fences in Sonoma County in 1846, p. 316.

272 BIDWELL, JOHN. 1890. Life in California Before the Gold Discovery. *Century Mag.* 41:163-183. Dec. 1890. Illus., map.

Recollections of the author. Mentions Sutter's launch carrying down hides, tallow, etc. and returning with lumber sawed by hand in the redwood groves nearest the bay, p. 169; and "a very large redwood tree near Santa Cruz, or rather a cluster of trees, forming apparently a single trunk, which was said to be seventy-two feet in circumference," p. 180.

273 BIGELOW, JOHN M. 1856. Description of the Forest Trees. In *U.S. War Dept. Reports of Explorations and Surveys . . . for a Railroad from the Mississippi River to the Pacific Ocean . . . in 1853-1854.* Vol. 4. Beverly Tucker, Printer, Wash., [D.C.]. (33d Cong., 2d sess. Senate Ex. Doc. 78.)

Describes the foliage and mentions the uses of redwood, p. 23-24.

274 BLEDSOE, ANTHONY J. 1885. Indian Wars of the Northwest. Bacon & Co., San Francisco. 505 p.

The Introduction contains brief sketches of H. H. Buhne, John Vance, Isaac Minor, C. S. Ricks and A. Brizard. In the Appendix, p. 487-503, there are many references to redwood forests, lumbering, trade, and early history.

275 BOLTON, HERBERT E. 1930. Anza's California Expeditions. Univ. of Calif. Press, Berkeley. 5 vols. Maps.

Volumes 1 and 3 contain several references to the sighting and measuring of redwoods by the Anza party. (Note: See also Font, "Font's Complete Diary" for vol. 4.)

276 BREWER, WILLIAM H. 1949. Up and Down California in 1860-1864. 2d ed. Ed. by Francis P. Farquhar. Univ. of Calif. Press, Berkeley, Calif. 583 p. Good index.

The journal of William H. Brewer. Many references to redwood in Santa Cruz, Marin, and Del Norte counties, and Russian River. Reference is made to the great flood of 1861-1862, the record of which has added value in view of the 1955 floods.

277 BRUFF, JOSEPH GOLDSBOROUGH. 1944. Gold Rush; The Journals, Drawings and Other Papers of J. Goldsborough Bruff. . . . April 2, 1849-July 20, 1851, vol. 2. Columbia Univ. Press, New York. Illus., index.

In Jan. and Feb. of 1851 Bruff was in the redwood region, and makes a few references to the trees and Indians of the region.

278 CAMP, CHARLES L., ed. 1928. James Clyman, American Frontiersman, 1792-1881. Calif. Hist. Soc., San Francisco. 247 p. Illus.

Subtitled: The Adventures of a trapper and covered wagon emigrant as told in his own reminiscences and diaries. Clyman mentions a sawmill 8 miles from Santa Cruz in 1845, p. 179. On Dec. 1, 1845, he wrote: "The red wood is generally fine straight and large but is only found plenty in some of the mountainous districts this is the timber spoken of by travelers as growing to such immence height and size the appearance [of] this wood much resembles our red cedar it generally splits straight and easy and is certainly a noble tree but is never found on the plains and only on a few of the mountains except those near the Coast where it is found plentifully in places and is fine for building covering and finishing houses and is the only timber fit for making rail fences or in fact to split for any other purpose."

279 CARR, JOHN. 1891. Pioneer Days in California. Times Pub. Co., Eureka, Calif. 452 p.

The last chapter is an alphabetical biography of some of the pioneers and is "quite extensive in respect to Humboldt and Trinity counties. . . ." There are good sketches of H. H. Buhne, William Carson, John Dolbeer, and Ryan, Duff & Co.

280 COLTON, WALTER. 1850. Three Years in California. A. S. Barnes & Co., New York. 456 p. Illus.

On p. 347, with the date Feb. 7, 1849, he wrote: "There is one tree in California that is worthy of note, which is peculiar to the country, and as deserving a place on her coat-of-arms as her grizzly bear. . . . This tree is called the redwood, and closely resembles, in its texture, size and antiseptic qualities, the giant cedars which have pinnacled, through the storms of a thousand years, the steeps of Lebanon. It is found on the table-lands between the coast range and the sea, and grows in distinct forests. . . . Its shaft rises straight and free of limbs, till high over the wave of other trees it can spread its emerald sails to the wind, compact as the royals of a ship of the line. The wood is of a pale red hue, and easily yields to any shape under the implements of the carpenter, but it is not sufficiently firm for the severer tests of cabinet work. It resists decay, whatever may be its exposure, and in the ground or on the roof is true to its trust. . . . In a grove of these trees, only a short ride from Monterey, stands one measuring sixty feet in circumference! Of its height I am not certain, as I had no means of measuring it—say three hundred feet. . . ." (Note: Also published, with title "The California Diary," by Biobooks, Oakland, Calif., 1948, 261 p.)

281 CORDUA, THEODOR. 1842. Memoirs of Theodor Cordua, ed. and transl. from the German by Erwin G. Gudde. *Calif. Hist. Soc. Q.* 12: 279-311. Dec. 1933.

The record of his ten years in California, 1842-1852. Very little on redwood, which he termed cedar, except in brief reference to the timber on his ranch, which was located near Corte Madera in Marin County.

282 CORNEY, PETER. 1821. Voyages in the Northern Pacific . . . 1813-1818 . . . T. G. Thrum, Honolulu, H. I., 1896. 138 p.

Makes mention of "pine" at Bodega and Monterey, p. 44, 82.

283 COSTANSO, MIGUEL. 1770. The Narrative of the Portola Expedition of 1769-1770, ed. by Adolph van Hemert-Engert and Frederick J. Teggart. Univ. of Calif., Berkeley. *Academy of Pac. Coast Hist.* 1:91-159. March 1910.

With Spanish and English versions. On p. 155 it was noted that the mountains around Monterey Bay were covered with "large white oaks and live-oaks . . . pines bearing cones . . . and groves of junipers, cypresses and various other trees."

284 COSTANSO, MIGUEL. 1770. The Portola Expedition of 1769-1770; Diary of Miguel Costanso, ed. by Frederick J. Teggart. Univ. of

Calif., Berkeley. *Academy of Pac. Coast Hist.* 2:161-327. Aug. 1911.

With Spanish and English versions. In Oct. 1769, the expedition was near Monterey, and the diary notes "some high hills very thickly covered with trees which some said were savins [savinos]. They were the largest, highest, and straightest trees that we had seen up to that time; some of them were four or five yards in diameter. The wood is of a dull, dark, reddish color, very soft, brittle, and full of knots," p. 251.

285 COY, OWEN C. 1929. The Humboldt Bay Region, 1850-1875. The Calif. State Hist. Assoc., Los Angeles. 346 p. Index, biblio., maps.

Subtitled: A Study in the American colonization of California. There is a section on the region and its discovery, 1542-1846. The bulk of the material on the lumber industry is from 1850-1875, divided into three periods, including land policy, mills, owners, production capacities, trade and shipping. The bibliography includes manuscript materials, and a good list of authorities is cited.

286 COY, OWEN C. 1925. Pictorial History of California. Univ. of Calif., Extension Div., Berkeley. 4 p. Introduction. 261 plates.

The 261 plates have descriptions. No. 199 is a sketch by Eduard Vischer (1864?) titled "The Railroad Reaches Palo Alto." A train is shown crossing San Francisquito Creek at the Palo Alto Tree; the sketch shows two distinct trees each having a branch about 10-15 feet from the ground. No. 240 is two photographs bearing the title "Scenes Along the Eel River" and showing redwood forests; there are pictures following that apparently are of redwood lumbering.

287 CRESPI, JUAN. 1774. Fray Juan Crespi, Missionary Explorer on the Pacific Coast, 1769-1774, ed. by Herbert E. Bolton. Univ. of Calif. Press, Berkeley, 1927. 402 p. Index.

Crespi's diaries of the Portola expedition. On Oct. 10, 1769, near the Pajaro River in Monterey County, he describes the area as "well forested with very high trees of a red color, not known to us. They have a very different leaf from cedars, and although the wood resembles cedar somewhat in color, it is very different, and has not the same odor; moreover, the wood of the trees that we have found is very brittle. In this region there is a great abundance of these trees and because none of the expedition recognizes them, they are named redwood for their color." He again notes them near the San Lorenzo River in Santa Cruz County, and on San Francisquito Creek near Palo Alto.

288 DALE, HARRISON C. 1918. The Ashley-Smith Explorations and the Discovery of a Central Route to the Pacific, 1822-1829. Arthur H. Clark Co., Cleveland. 352 p.

In the second journal of Harrison G. Rogers, near the mouth of Redwood Creek, on May 21, 1828, he noted "The timber in this part of this country is principally hemlock, pine, and white ceadar, the most of the ceadar trees from 5 to 15 feet in diameter and tall in proportion to the thickness. . . ." On June 17, 1828, near Lake Earl, and on June 22, 1828, a trifle south of the Oregon line, he again briefly mentions "ceadar, of considerable size, and very thick on the ground. . . ."

289 DALLIMORE, W. 1932. William Lobb and John Jeffrey. *Forestry* [London]. 6:5-8. June 1932.

States that Lobb collected cones and seeds of Coast redwood in the autumn of 1851, p. 6.

290 DAVIDSON, GEORGE. 1891. The Discovery of Humboldt Bay. Geog. Soc. of the Pac., San Francisco. 16 p. Maps.

A resumé of discovery from Cabrillo (1542) through to the first recognition of the Bay itself in 1806 by Captain Winship. Mentions Cabrillo naming the heavily wooded land behind Fort Ross *"el Cabo de Pinos."*

291 DUFLOT DE MOFRAS, EUGENE. 1844. Travels on the Pacific Coast, transl. by M. E. Wilbur. The Fine Arts Press, Santa Ana, Calif., 1937. 2 vols.

Brief references to the forests at Fort Ross: "more than 20 varieties of pine and other trees belonging to the coniferous group. Some attain a height of 300 feet." and "Nothing can surpass the picturesque and spectacular setting which the forests of mammoth pines that form the background supply." on p. 6, 7 of vol. 1.

292 DUHAUT-CILLY, AUGUSTE BERNARD. 1828. Duhaut-Cilly's Account of California in 1827-1828, transl. from the French by Charles F. Carter. *Calif. Hist. Soc. Q.* 8:306-335. Dec. 1929.

At the Fort Ross colony, p. 325-327: "We went with M. Shelikof to see his felling of wood. Independently of the needs of the establishment, he cuts a great quantity of boards, small beams, thick planks, etc., which he sells in California, the Sandwich Islands, and elsewhere: he has even entire houses built which may then be transported taken apart. The trees he cuts are almost all firs of various species, and in particular the one called *palo colorado* [redwood]. This fir has no other quality than that of being very regular, and to be split with the greatest ease; besides, it is but slightly resinous and quite brittle. It is the largest tree I have ever seen. M. Shelikof made me observe the cut trunk of a fir of this species recently felled: it was 20 feet in diameter, taking this measurement two feet from the ground, and from one edge or relief to the other; the whole trunk was more than thirteen feet wide: I measured 230 feet from the stump to the beginning of the top . . . all the *palos colorados* are not so immense; but it is very common to see those which three men would have difficulty in clasping. . . ."

293 DUHAUT-CILLY, AUGUSTE BERNARD. 1828. A Visit to the Russians in 1828. Transl. from the French by Charles Franklin Carter. *Calif. Hist. Soc. Q.* 8:322-327. Dec. 1929. (Reprinted by The Grabhorn Press, San Francisco, 1946, 15 p., "by the Silverado Squatters.")

Notes from this journal containing several references to redwood. Bodega Bay and Russian River are described, and at Fort Ross he wrote of the well-made wooden buildings, the felling of redwood, the knock-down houses, and the size of the trees.

294 ELLIOTT, W. W., & CO. 1882. History of Humboldt County. Wallace W. Elliott & Co., San Francisco. 218 p. Illus.

Includes many references to redwood and lumbering, including a section on p. 140-144 which advocates care in lumbering for regrowth by sprouts, the resources available, uses, and some lumbering and milling history.

295 AN ENGLISHMAN. 1830. On the Ambitious Projects of Russia in Regard to North West America . . . by an Englishman. Introduction by George P. Hammond. The Book Club of Calif., San Francisco, 1955. 79 p.

Contains no specific reference to redwood, but mentions "abundance of the finest timber" near Fort Ross, and that the Russian colony did some lumbering in the area.

296 ESSIG, E. O. 1933. The Russian Settlement at Ross. *Calif. Hist. Soc. Q.* 12:191-209. Sept. 1933. Illus.

The author quotes from the journals of some of the Russian colonists, and Duhaut-Cilly, in describing the redwoods, and notes that all the buildings and the stockade were of hewn redwood. In 1927 the author "made a critical examination of the few remaining timbers of the north bastion. They were just 115 years old and were completely honeycombed by the dry-wood termite, *Kalotermes minor* (Hagen) . . . the wood surrounding the tunnels were still sound. This structure had resisted the attacks of all insects until possibly within the last twenty years which is a record for a neglected and weather-beaten wooden building." Illustrations of Fort Ross in 1835 by Duhaut-Cilly, another in 1843, and in 1906 after the earthquake. Bibliography of the Russians in California, p. 210-216.

297 EVANS, ALBERT S. 1873. Á la California. A. L. Bancroft & Co., San Francisco. 379 p. Illus.

The author writes of the Coast Range mountains of San Mateo and Santa Cruz counties, and the redwood, other vegetation, and animals of the region, p. 98-99. He describes the properties of the wood, stressing the softness and brittle character, p. 102-106. States that he saw ox-teams of 10 to 20 pairs of oxen hauling lumber on wagons to the Bay to be shipped to San Francisco, p. 102.

298 FAGES, PEDRO. 1770. A Historical, Political and Natural Description of California, transl. from the Spanish by Herbert Ingram Priestley. Univ. of Calif. Press, Berkeley, 1937. 88 p. Map.

He describes redwoods near Monterey on p. 57: "Besides the pines, live oaks, and white oaks, there is here another kind of fine wood of the color of cedar." And in Santa Clara County on p. 69: "Here are seen some trees so large that eight men all holding hands could not span one of them. It is not known to what species they belong, but they have been called *sabinos* on account of their enormous, gigantic size."

299 FARNHAM, ELIZA WOODSON. 1856. California, Indoors and Out. Dix, Edwards & Co., New York. 508 p.

Mentions the size of the redwoods in Santa Cruz County, p. 203-204.

300 FARNHAM, THOMAS J. 1846. Life and Adventures in California, and Scenes in the Pacific Ocean. W. H. Graham, New York. 416 p.

Chapter 19 speaks of "cedars" on the northern coast belt. On p. 398: "One of these *Pinus Douglasii,* first described by Douglas, is probably the grandest of the whole vegetable kingdom. It is found on the mountains about the Bay of San Francisco, on the highlands near the upper branches of the Colorado River, and in some other sections of Upper California, generally on elevated localities. My readers must not think of Baron Munchhausen when I offer to vouch for the fact that specimens of this tree occur of the height of two hundred and forty feet, the base of whose trunks have a circumference of nearly sixty feet. The trunk is quite destitute of branches until above more than half the altitude, when they grow outward and upward in such a manner as to give the top the form of an inverted pyramid. From the ends of the branches hang cones or seed-vessels, from twelve to fifteen inches in length, and egg-shaped. The seeds are as large as a good-sized bean, and furnish a common article of food to the Indians, who collect large quantities of them in the autumn, and pound them into a kind of cake, which is baked on heated stones. The wood is very fine-grained, and contains a great quantity of resin." (Apparently a confusion of Douglas fir and sugar pine. E.F.)

301 FONT, PEDRO. 1776. The Anza Expedition of 1775-1776; Diary of Pedro Font, ed. by Frederick J. Teggart. Univ. of Calif., Berkeley. *Acad. of Pac. Coast Hist.* 3:1-131. March 1913.

With Spanish and English versions. The diary notes they examined a grove "wooded with spruce—they also call this tree *palo colorado* [redwood] . . . in order to see if it contained good timber for the settlement of the port" of San Francisco. There is no report as to the decision. The largest tree measured was 50 yards high, 5½ yards in circumference, p. 75-77.

302 FONT, PEDRO. 1777. Font's Complete Diary of the Second Anza Expedition, 1775-1777, ed. by Herbert E. Bolton. Univ. of Calif. Press, Berkeley, 1930. 552 p. Maps.

This is volume 4 of "Anza's California Expeditions." Font observed and noted many redwoods, termed "palo colorado," during the expedition.

303 FRÉMONT, JOHN C. 1848. Geographical Memoir Upon Upper California. Wendell & Benthuysen, Printers, [Wash., D.C.] 67 p. (30th Cong., 1st sess. Senate. Misc. 148.)

Also in *Notes of Travel in California,* D. Appleton & Co., New York, 1849, 29 p. Subtitled: In Illustration of his map of Oregon and California: Addressed to the Senate of the U.S. Describes his travels; in 1846 he saw "palo colorado" trees in Monterey and Santa Cruz, p. 36-37.

304 FRÉMONT, JOHN C. 1887. Memoirs of My Life. Belford, Clarke & Co., Chicago and New York. 655 p.

In March, 1845, he was in the Santa Cruz Mountains, and described the size of the redwoods and characteristics of the wood, p. 457. He also made several references to "cypress" of extraordinary size in the vicinity of San Francisco Bay.

305 GALBRAITH, EDITH C. 1791. Malaspinas' Voyage Around the World. *Calif. Hist. Soc. Q.* 3:215-217. Oct. 1924.

The party stopped at Monterey in 1791, including Thaddeus Haenke, the botanist: "Imagine what must have been the agreeable surprize of all of us at seeing in the month of September, some leagues around Monterey, common vegetation blossoming so fresh and abundant . . . the fields were adorned with woods, now open, now dense, with pine, alder, oaks, and live oaks, and along with these on the higher summits the red pine, a tree much taller than the rest. . . ."

306 GRANT, ULYSSES S. 1885. Personal Memoirs of U.S. Grant. C. L. Webster & Co., New York, 1885-1886. 2 vols.

In 1853 Grant was transferred to Fort Humboldt, and wrote: "There was no way of reaching Humboldt at that time except to take passage on a San Francisco sailing vessel going after lumber. Red wood, a species of cedar, which on the Pacific Coast takes the place filled by white pine in the East, then abounded on the banks of Humboldt Bay. There were extensive sawmills engaged in preparing this lumber for the San Francisco market. . . ." p. 207.

307 GRAY, [Asa], TORREY, THURBER, and ENGELMANN. 1860. Catalogue of the Plants Collected Upon the Expedition. In *Report Upon the Colorado River of the West, Explored in 1857 and 1858 by Lt. Joseph C. Ives* . . . Govt. Printing Office, Wash., D.C. (36th Cong., 1st sess. House. Ex. Doc. 90.)

Part 4, Botany, contains the following reference on p. 28: "Sequoia sempervirens, Endl. Syst. Conif., p. 198. Coast mountains, south of San Francisco."

308 HAMILTON, WILSON. 1886. The New Empire and Her Representative Men. Pac. Press Pub. House, Oakland, Calif. 180 p. Tables.

The author noted the increasing timber shortage in the northeast and Lake states, and the growing importance of redwood; tables include production and sales by counties, foreign shipments, and mills operating (figures for 1885), p. 24-28.

309 HARRISON, EDWARD S. 1892. History of Santa Cruz County, California. Printed for the author by Pacific Press. Pub. Co., San Francisco. 379 p.

Contains many references to redwood, including early explorations and discovery.

310 HASTINGS, LANSFORD W. 1845. The Emigrants' Guide to Oregon and California, reproduced in facsimile from the original ed. of 1845, with historical note and biblio. by Charles H. Carey. Princeton Univ. Press, Princeton, 1932. 157 p. Index.

Also published in 1857 with title "A New Description of Oregon and California." Hastings notes, on p. 86: "The largest and most valuable timber is found, upon the coast, where dense forrests, in many places, are found, consisting of fir, pine, cedar, 'redwood' (a species of cedar,) spruce, oak, ash and poplar. Much of this timber grows to an enormous size, especially, the 'redwood,' fir and pine, which are frequently seen two hundred, and even two hundred and fifty feet in height, and fifteen or twenty feet in diameter. This timber makes excellent lumber, but its vast size renders it extremely difficult, either to chop or saw it, with any degree of facility."

311 HITTELL, THEODORE H. 1898. History of California. N. J. Stone Co., San Francisco. vol. 2. 823 p.

The range and characteristics of redwood are mentioned on p. 552-553. On p. 376 there is a short history of Stephen Smith, an American resident of California, who visited the redwoods near Bodega Corners in 1842 and determined to locate there. In 1843 he brought a steam sawmill from the eastern U.S., employed 4 men to help him set up the mill, and began to saw out timbers. It also states he "procured lumber at Santa Cruz."

312 HOOKER, WILLIAM J., and G. A. WALKER ARNOTT. 1841. The Botany of Captain Beechey's Voyage . . . in 1825. Henry G. Bohn, London, p. 160, 392.

The book first appeared in installments, beginning in 1830, in the *Journal of Botany.* Capt. Beechey's ship, the H.M.S. "Blossom," visited Monterey in Nov. 1827. Collections were by Messrs. Lay and Collie. On page 160 *Abies religiosa* is described as follows: "The native name is *Red Cedar.* The older wood in the centre is of a dark red colour, whilst the newer and outer is white. It is very dry and splintery, but continues a long time undecayed, when covered with earth. The trees grow large, straight, and tall, sending off their branches at right angles. They decorate the valleys and tops of the mountains, and are the most general trees on the shores of the Bay of San Francisco. I was informed that there are trees of this species in the vallies between Santa Clara and Santa Cruz, 150 feet high, one of which was 25 feet in circumference. When young, the wood is so full of sap, as to make it sink in salt water." This description was by Collie; the authors note this might be *Pseudotsuga taxifolia.*

On page 392 *Taxodium sempervirens* is described by the authors. "Of this we have seen no flowers nor fruit, and the leaves are nearly twice the length of those figured in Mr. Lambert's work, shining on the upper side as in *Podocarpus,* and glaucous underneath. The tips of the branches exhibit buds formed of imbricated membranaceous concave shining scales, which resemble the scales at the base of the galbule in Lambert's description. . . . Our plant is obviously what Douglas alludes to in his Journal."

313 JEPSON, WILLIS L. 1929. The Botanical Explorers of California. *Madroño.* 1:262-266. Dec. 1929.

The author states evidence indicating that Archibald Menzies collected redwood in 1794, the principal reasons being that Menzies came ashore at Santa Cruz in 1794 and the original specimen in the Natural History Museum, London, bears this entry on the back, "Santa Cruz, Menzies". Menzies' journal makes no reference to redwood in the copy possessed by the author.

314 JEPSON, WILLIS L. 1929. Sequoia sempervirens in Granada. *Madroño.* 1:242. Sept. 1929.

The author was sent a spray from a redwood tree about 4 ft. in diameter and 125 ft. tall (in 1926) which was growing in Granada, Spain. Evidence is presented indicating that Thaddeus Haenke was the first to botanically collect redwood in 1791, and this tree indicates he collected seed as well as specimens.

315 JONES, IDWAL. 1951. Ark of Empire. Doubleday, Garden City, 1951. 243 p.

Includes story, in chapters 1 and 2, of the "Montgomery Block," a building at Washington and Montgomery Streets, San Francisco. Completed in 1853, its foundation is redwood logs from Alameda and Contra Costa counties.

316 LEONARD, ZENAS. 1839. Narrative of the Adventures of Zenas Leonard, ed. by Milo M. Quaife. Lakeside Press, R. R. Donnelley & Sons Co., Chicago, 1934. 278 p. Good index, map.

Also, under title "Leonard's Narrative: Adventures of Zenas Leonard, Fur Trader and Trapper, 1831-1836," ed. by W. F. Wagner. Burrows Bros. Co., Cleveland, Ohio, 1904. 317 p. Illus., maps, index.

Leonard entered California late in 1833 through the Yosemite Valley from Nevada in Capt. Joseph R. Walker's party of about 50 men. In Oct. he wrote: "In the last two days traveling we have found some trees of the Redwood species, incredibly large—some of which would measure from 16 to 18 fathoms round the trunk at the height of a man's head from the ground" (p. 135-136). The route of the party continued to San Francisco and south to Monterey, but no mention is made of having seen Coast Redwood.

317 M., A. 1866. Notes on Conifers: No. 10 and 11, Sequoia Sempervirens. *Gardeners' Chron.* [London] 26: 970-971; 1042-1043. Oct. 13/Nov. 3, 1866.

Historical and scientific articles, including brief information on geologic age, classification, description, and comparison with Sierra redwood. The second article includes information on the growth of redwood in the British Isles, where it was introduced about 27 years previously.

318 McBETH, FRANCES TURNER. 1950. Lower Klamath Country. Anchor Press, Berkeley. 76 p. Maps.

Historical, to about 1890; some reference to redwood and early small mills. Chapter on Jedediah Strong Smith, p. 4-7.

319 MARRYAT, FRANK [FRANCIS SAMUEL]. 1855. Mountains and Molehills. Harper & Bros., New York. 393 p.

Also, *Index to Mountains and Molehills*, Joseph Gaer, ed., SERA Project [1935], 30 p. Processed.

The author found redwoods near Napa in 1850, then settled on a claim on Russian River, giving an account of a mill erected there in 1850. He describes how birds, the carpentaro, stored acorns in holes drilled in the redwood bark; Digger Indians, to get the acorns, built fires at the base of the redwoods to fell them, p. 106-109, 187.

320 MENZIES, ARCHIBALD. 1793. Menzies' California Journal. *Calif. Hist. Soc. Q.* 2:265-340. Jan. 1924.

Extracts covering the visit to California, with an introduction and notes by Alice Eastwood. There is no mention of redwood in these extracts of the Vancouver expedition of 1792-1793, though Menzies was ashore in San Francisco, Monterey, Port Trinidad and Bodega. He would have collected more plants if the local agents of the government had not been instructed to limit the explorations of the party.

321 MOERENHOUT, J. A. 1847. [Letter to the French Minister of Foreign Affairs.] *Calif. Hist. Soc. Q.* 12:350-352. Dec. 1933.

Letter from the French Consul at Monterey, Calif., written Sept. 25, 1847, in which he reports: "Lumber, which before the arrival of the Americans, sold for 2 or 2½ cents per superficial foot . . . is scarce now in California and is sold at Yerba Buena [San Francisco] and at Monterey for from $50 to $60 per thousand feet. . . . At Santa Cruz M. [Charles] Roussillon, also of Bordeaux, in partnership with M. Sansilvain, has set up a sawmill in the midst of an immense forest [in the Santa Cruz Mountains] and on a stream sufficient to keep the mill going day and night all the year around. The establishments of these Frenchmen are among the largest of their kind to be found in this country."

322 MURDOCK, CHARLES A. 1921. A Backward Glance at Eighty. P. Elder & Co., San Francisco. 275 p.

The author's memoirs. Contains an account of the discovery of Humboldt Bay by Josiah Gregg's party in 1849, and mention of their experiences in the redwoods, in a section called "Humboldt Bay 1855," p. 21-98.

323 O'BRIEN, ROBERT. 1948. This Is San Francisco. Whittlesy House, New York. 351 p. Illus., map.

Contains several references of historic interest for the redwood region, including the rise and fall of Harry Meiggs, and the redwood log foundation of the building known as the "Montgomery Block."

324 PALÓU, FRAY FRANCISCO. 1769. Historical Memoirs of New California, vol. 2, ed. by Herbert E. Bolton. Univ. of Calif. Press, Berkeley, 1926. 390 p.

Translation of the diary of Palóu. On Oct. 10, 1769, near Monterey, he describes a cedar-like tree, unknown to them: "They have a very different leaf from cedars, and although the wood resembles cedar somewhat in color, it is very different, and has not the same odor; moreover, the wood of the trees that we have found is very brittle . . . they are named redwood from their color."

325 PARRISH, NARCISSA LOUISE. 1925. The Early History of the Santa Cruz Region. [Berkeley, Calif.] 135 p. Maps, biblio. Processed.

Thesis (M.A.) — Univ. of Calif., Aug. 1925.
County history, covering the early explorations, through about 1850.

326 PORTOLA, GASPAR DE. 1769. Diary of Gaspar de Portola During the California Expedition of 1769-1770, ed. by Donald Eugene Smith and Frederick J. Teggart. Univ. of Calif., Berkeley. *Academy of Pac. Coast Hist.* 1:31-89. Oct. 1909.

With Spanish and English versions. In August 1769 the diary mentions that natives on the Santa Barbara Channel and north made canoes constructed of boards, but no mention of species of lumber, p. 55-59. In Sept. 1769 mention of a gully surrounded with pine woods, but no further description of them, p. 63.

327 POWELL, JOHN J. 1874. The Golden State and Its Resources. Bacon & Co., San Francisco. 219 p.

Brief reference concerning the size and importance of Coast redwood, p. 49-51.

328 PRATT, HARRY NOYES. 1923. Oakland; Lumber Town. *Oakland Tribune* [Oakland, Calif.] Mag. section, p. 6. August 26, 1923.

Describes lumbering in the "San Antonio" redwoods back of Oakland in the late 1840's.

329 ROBERTSON, JOHN W. 1926. The Harbor of St. Francis. Private printing by the Grabhorn Press, San Francisco. 120 p. Maps.

In discussing various arguments for and against San Francisco Bay as the original landing place of Sir Francis Drake, the author cites Chapman as saying the first historical entrance into the Bay was made in a dugout hollowed from a redwood tree in 1775: "Stopping long enough at Monterey to build a launch by hollowing out the trunk of a redwood tree. Ayala set sail again on July 27; eight days later, on August 4, he arrived off the entrance to San Francisco Bay."

330 SIERRA, FRAY BENITO DE LA. 1775. Fray Benito de la Sierra's Account of the Hezeta Expedition to the Northwest Coast in 1775. A. J. Baker, transl. In *Calif. Hist. Soc. Q.* 9:201-242. Sept. 1930.

The expedition landed near Trinidad

Bay on June 18, 1775, and his diary notes "Near the river the party came across one very thick and very tall [tree] which out of curiosity they measured, finding it to be over 47 yards in height. . . ." Henry R. Wagner, who wrote the introduction and notes to the translation, states that the trees seen were redwoods.

331 STEWART, WATT. 1946. Henry Meiggs, Yankee Pizarro. Duke Univ. Press, Durham, N.C. 370 p. Illus.

The leading chapter gives Meigg's history up to the time he fled to Chile; describes him as having been a lumberman in New York State, and of following lumbering also in California (Big River, Mendocino County).

332 TORCHIANA, HENRY ALBERT VAN COENEN. 1933. The Story of the Mission Santa Cruz. P. Elder & Co., San Francisco. 460 p. Illus., index.

Includes translations of sections of the diaries of Crespi and Palóu which mention redwood, and also a few brief references to the beauty of the present groves.

333 TORREY, JOHN. 1856. Descriptions of the General Botanical Collections. In *U.S. War Dept. Reports of Explorations and Surveys . . . for a Railroad from the Mississippi River to the Pacific Ocean . . . in 1853-1854.* vol. 4. Beverly Tucker, Printer, Wash., D.C. (33d Cong., 2d sess. Senate. Ex. Doc. 78.)

States redwood found in "mountains near Oakland," p. 140.

334 TYSON, PHILIP T. 1851. Geology and Industrial Resources of California. W. Minifie & Co., Baltimore. 127 p. Illus., maps. (Reprinted from U.S. 31st Cong. 1st sess. Senate. Ex. Doc. 47.)

P. 43-45 contain a description of the tree together with the range, and 1/7th acre survey from which an average yield figure of one million b.f. per acre was obtained; statements of future possibilities, and assumptions such as the possibilities of introduction into other areas.

335 WATSON, SERENO. 1880. Botany [of California]. In *Calif. Geological Survey. Botany: vol. 2.* [John Wilson & Son, Univ. Press, Cambridge.] 559 p. Index.

Description of redwood p. 116. States that it was collected by Menzies about 1794 and not again noticed until Douglas collected it in 1833.

336 WEYMOUTH, ALICE JENKINS. 1930. The Palo Alto Tree. [Stanford Univ. Press, Stanford, Calif.] 20 p. Illus., biblio.

Material taken from the diaries of Crespi, Costanso, Palóu and Font tells how three expeditions in the years 1769, 1774, 1776 camped near the tree. Font in 1776 described and measured the tree.

337 WILKS, W., and JOHN WEATHERS, eds. 1892. Report of the Conifer Conference. Royal Horticultural Soc., London. *Journal.* 14 (ser. 2): 50, 70, 97, 121, 247, 309-310.

References to Coast redwood include description of the tree and characteristics of the wood, and notes on early discovery and introduction into the British Isles by Hartweg in 1846.

338 WOOD, LEWIS KEYSOR. 1856. The Discovery of Humboldt Bay; a narrative. [Society of California Pioneers, San Francisco, 1932.] 22 p.

"Originally published in the Humboldt Times, beginning on April 26, 1856 . . . subsequently reprinted [by] The Society of California Pioneers . . . in their Quarterly [9:41-64, March 1932] . . . reissued in this pamphlet form." Appears also in The Quest for Qual-A-Wa-Loo, p. 111-170, Oscar Lewis, ed. The author was one of the party of 8 miners under Josiah Gregg, who in Nov. 1849 decided to investigate the

Indians' report of a large bay (Humboldt) and prairies. The narrative describes their route, stressing their difficulties in the dense redwood forests.

INDIANS IN RELATION TO COAST REDWOOD

339 ALDRICH, FAY G., and IDA McBRIDE. 1939. Ancient Legends of the California Indians of the Redwood Empire. Published privately by the authors, Orick, Calif. 8 p.

340 KROEBER, ALFRED L. 1920. California Culture Provinces. In *Univ. of Calif. Pubs. in Amer. Archaeology and Ethnology,* vol. 17, no. 2, p. 151-169. Univ. of Calif. Press, Berkeley.

Mentions that the Indians of the Northwestern part of California used redwood for making planked houses and for the manufacture of canoes, p. 158-159.

341 KROEBER, ALFRED L. 1925. Handbook of the Indians of California. Smithsonian Inst. Bur. of Ethnology. Bul. 78. Govt. Printing Office, Wash., D.C. 995 p. Illus., biblio.

A basic source book. Includes several references to the uses of redwood by the *Yurok, Tolowa, Wiyot, Hupa, Karok,* and *Sinkyone* tribes; particularly a description in great detail of the construction of *Yurok* houses and sweathouses from redwood; and a detailed account of the construction and uses of the *Yurok* type canoe, made only from redwood because of its size, evenness of grain, and softness under tools.

342 POWERS, STEPHEN. 1877. Tribes of California. U.S. Dept. of the Interior, Wash., D.C. 635 p. Illus., index.

Contains several brief references to redwood canoes and lodges built by various Indian tribes of the redwood region.

BOTANY OF THE TREE, FOREST AND WOOD. PALEOBOTANY

THE TREE

General

343 ANON. 1890. The Redwood. *Gardeners' Chronicle* [London]. 8 (3d series) : 302-304. Sept. 13, 1890. Illus.

Popular and general description (some inaccuracies: grows "nearly to Mexican border"). Brief general information on redwood in England.

344 ANON. 1916. A Tree Within a Tree. *Amer. Forestry* [*Amer. Forests*]. 22:208. April 1916. Illus.

Photograph showing a small redwood sprout growing within an old redwood shell in Mendocino County, and a brief note on it.

345 ABRAMS, LEROY. 1951. Illustrated Flora of the Pacific States. Stanford Univ. Press, Stanford, Calif. 4 vols.

Covers the flora of the redwood region. Three of the four volumes have been completed, vol. 1 in 1923, vol. 2 in 1944 and vol. 3 in 1951. The first volume deals with plants from ferns through the Birthwort family. The second from the Buckwheats through the Dramerias, and the third from Geraniums through the Figworts.

346 AUSTRALIA. COMMONWEALTH FORESTRY BUR. 1932. Californian Redwood, (Sequoia Sempervirens Endlicher) by A. D. Lindsay. Canberra. 6 p. (Its Leaflet No. 21.) Processed.

Brief description of the characteristics of the species and conditions necessary to its growth.

347 BAILEY, LIBERTY H. 1933. The Cultivated Conifers of North America. Macmillan Co., New York. 404 p. Illus., index.

Gives botanical description of Coast redwood, and lists the following varieties: *adpressa, glauca, pendula*, p. 140-141.

348 BALL, E. 1955. Studies of the Nutrition of the Callus Culture of *Sequoia Sempervirens* [with discussion]. Année Biol. (n.s.) 31: 81-105. Illus. (20 photos), Tables (2). Biblio.

349 BATERDEN, J. R. 1908. Timber. Archibald, Constable & Co., Ltd., London.

Timber of the U.S. and Canada, p. 105-111, including Sequoia or Californian redwood. These trees are interesting from a scientific point of view, being the last living representatives of a geological age.

350 BEHR, H. H. 1888. Flora of the Vicinity of San Francisco. Payot, Upham & Co., San Francisco.

Sequoia, p. 74, 328.

351 BERRY, JAMES B. 1924. Western Forest Trees. World Book Co., Younkers-on-Hudson, New York. 212 p. Illus., index.

Dendrology and characteristics of Coast redwood, p. 59-61.

352 BOWERS, NATHAN A. 1942. Cone-bearing Trees of the Pacific Coast. Pac. Books, Palo Alto, Calif. 169 p. Illus., index. Revised 1956.

Brief description of Coast and Sierra redwood, including leaves, cones, bark, and general notes on Sequoia; tables give dimensions of the four largest Sierra redwoods, and eight Coast redwoods.

353 BREWER, WILLIAM H. 1880. List of Persons Who Have Made Botanical Collections in California. In *Calif. Geological Survey. Botany: vol. 2.* [John Wilson & Son, Univ. Press, Cambridge], p. 553-559.

Including a brief note of each botanist's region of exploration and his contribution. The list includes Haenke, Menzies, von Langsdorff, Douglas, Coulter, Nuttall, Hartweg and several others, both major and minor, up to the 1870's.

354 BRITTON, NATHANIEL L. 1908. North American Trees. Henry Holt & Co., New York. 894 p. Illus., index.

General botanical description of the tree and the wood, p. 88-90.

355 CALIF. REDWOOD ASSOC. 1917. Two Births 2,000 Years Ago. San Francisco. 10 p. Illus.

Subtitle: A story of the oldest living thing in the world. . . .

356 CHAMBERLAIN, CHARLES JOSEPH. 1935. Gymnosperms: Structure and Evolution. Univ. of Chicago Press, Chicago. 397 p. Illus., biblio.

Contains a general reference to Coast and Sierra redwood on p. 218.

357 CHAMBERLAIN, CHARLES J. 1902. Sequoia sempervirens. *Bot. Gazette.* 33:168-169. June 1902.

Description of fertilization.

358 CHANDLER, KATHERINE. 1903. Habits of California Plants. Educational Pub. Co., San Francisco.

Description of redwood: leaves, flowering reproduction, p. 199-200.

359 DALLIMORE, W. 1931. Redwood, Sequoia Sempervirens. *Q. J. Forestry* [London]. 28:242-243. July 1931. Illus.

General description, with some data on redwood in British Isles.

360 DALLIMORE, W., and A. BRUCE JACKSON. 1948. A Handbook of Coniferae Including Ginkgoaceae. 3d ed. Edward Arnold & Co., London. 682 p. Illus., index.

Botanical description of the tree, the wood, and some uses. Six varieties are briefly described. Introduced into England by Hartweg in 1846. Probably based on Jepson, Fisher, and Sudworth. (Redwood discussed, p. 597-600.)

361 DETWILER, SAMUEL B. 1916. The Redwoods; Identification and Characteristics. *Amer. Forestry* [*Amer. Forests*]. 22:323-328. June 1916. Illus.

Popular. Coast redwood and Sierra redwood discussed. Brief history of name Sequoia; botanical range given; statements as to size and growth of trees.

362 EAMES, ARTHUR J., and LAURENCE H. MacDANIELS. 1947. An Introduction to Plant Anatomy. 2d ed. McGraw-Hill Book Co., New York. 427 p. Illus., index.

Textbook. Contains material on Coast Redwood. There is a list of books for reference at the end of each chapter.

363 EASTWOOD, ALICE. 1905. A Handbook of the Trees of California. [Calif. Acad. Sci., San Francisco.] Occasional Paper 9. 86 p.

Brief, general botanical description, p. 20.

364 ELLIOTT, SIMON B. 1912. The Important Timber Trees of the United States; a Manual of Practical Forestry. Houghton Mifflin Co., Boston. 382 p.

General description of Coast redwood tree and wood, p. 228-230.

365 FRITZ, EMANUEL. 1929. Redwood, the Extraordinary. *Timberman*. 30:38-39, 77. May 1929. Illus.

Popular but concise description of properties of wood, reproduction, resistance to damage, bark and burls.

366 FRITZ, EMANUEL. 1929. Some Popular Fallacies Concerning California Redwood. *Madroño*. 1: 221-224. July 1929.

Similar title in *Calif. Countryman* [Univ. of Calif. *J. of Agr.*]. 15:8, 22. March 1929. Illus.

Material presented covers size, age, rate of growth, influence of fire and distribution of age classes.

367 GIBSON, HENRY H. 1913. American Forest Trees, ed. by Hu Maxwell. Hardwood Record, Chicago. 708 p. Illus., index.

General discussion of the tree, the forest, the wood, and uses, p. 181-184.

368 GORDON, GEORGE. 1858. The Pinetum. Henry G. Bohn, London. 353 p. Index.

Description of leaves, flowers, branches, and cones, p. 303-304. Also a new edition, in 1880, with essentially the same information on redwood, p. 379-381.

369 GREEN, EDWARD L. 1887-1889. Pittonia. Cubery & Co., San Francisco.

Biographical notice of Dr. Albert Kellog, vol. I, p. 145-151.

370 GREEN, GEORGE REX. 1933. Trees of North America. (Exclusive of Mexico.) Edwards Bros., Inc., Ann Arbor, Mich.

The Redwoods, vol. I, p. 130-133.

371 HALL, HARVEY M., and JOSEPH GRINNELL. 1919. Life-zone Indicators in California. *Calif. Acad. Sci. Proc.* 9 (ser. 4):37-67. June 16, 1919.

States that Coast redwood is a species particularly characteristic of and restricted to the Transition Life-zone, p. 57.

372 HAMMATT, RICHARD F. 1922. The Invincible Redwoods. *Oakland Tribune*, Oakland, Calif. 1922 Annual Year Book.

373 HANZLIK, EDWARD J. 1928. Trees and Forests of Western United States. Dunham Printing Co., Portland, Oregon. 128 p. Illus., tables, index.

General book on western trees with key forest regions. Main discussion of Coast redwood, p. 45-49, including characteristics of the tree and wood, growth, and yield tables for site quality II and III (by D. Bruce).

374 HOWE, J. WENDELL. 1935. Redwood Family. In *Sci. Guide for Elementary Schools.* Calif. State Dept. of Educ., Sacramento. 1:43-48. March 1935. Illus.

A brief historical sketch, description of tree and location, for Coast and Sierra redwood.

375 JEFFREY, EDWARD C. 1903. The Comparative Anatomy and Phylogeny of the Coniferales: Part 1, The Genus Sequoia. *Boston Soc. of Natural Hist. Memoirs.* 5:441-459. Nov. 1903. Illus.

The author compares parts of the Coast and Sierra redwood; finding that resin ducts appear normally in the latter but only as a result of injury in the former, he concludes that "a consideration of the mode of occurrence of resin ducts in the Sequoias leads to the conclusion that they are an ancestral feature of structure in the wood." Several diagrams illustrate his findings.
Reviewed by J. M. Coulter in *Bot. Gazette,* 37:402. May 1904.

376 JEPSON, WILLIS LINN. 1911. A Flora of Western Middle California. 2d ed. Cunningham, Curtiss & Welch, San Francisco. 515 p. Index.

Brief botanical description includes range and size, p. 22-23. The flora of the redwood belt.

377 JEPSON, WILLIS LINN. 1923. The Sequoias of California, Their Life-history, and Geographic Distribution. *Pac. Sci. Cong. (Australia) Proc.* 1:307-312.

General information concerning the distribution, dimensions, lumber yield, root systems, reproduction, seed, etc., of the two species of Sequoias. The most important factors causing the geographic segregation of the species are said to be climatic.

378 JEPSON, WILLIS LINN. 1910. Silva of California. The Univ. Press, Berkeley. 480 p. Illus., biblio.

The "Redwood Family," p. 127-146; p. 128-139 on the Coast redwood; other notes in the introductory chapters. The leading study on redwood: includes range, ecology, description of the tree and forest, age, reproduction, logging methods of the time, wood characteristics and properties.
A prime source book.

379 JEPSON, WILLIS LINN. 1923. The Trees of California. 2d ed. Sather Gate Bookshop, Berkeley, Calif. 240 p. Illus., index.

Complete botanical description, including reproduction and growth, durability and resistance, habitat and associated species, p. 13-23. Geologic history of redwood, p. 152-154. Good index. Important source book.

380 KELLOGG, ALBERT. 1882. Forest Trees of California. J. D. Young, Supt. State Printing, Sacramento. 148 p.

Also in *Second Rpt. of the State Mineralogist of Calif., 1880-1882.* p. 5-116 of the Appendix: redwood described, p. 21-23; reprinted in *Pacific Rural Press* [*Calif. Farmer*]. 24:33. July 15, 1882.
General description in poetic language, p. 24-26.

381 LEMMON, JOHN G. 1897. Conifers of the Pacific Slope — How to Distinguish Them. *Sierra Club Bul.* 2:61-78; 156-173; 4:100-131. May 1897; Jan. 1898; June 1902. Illus.

Redwood discussed, p. 170-171.

382 LEMMON, JOHN G. 1901. Forestry: Forest Endowment of the Pacific Slope — Particularly California. *Pacific Rural Press* [*Calif. Farmer*]. 61:340-341. June 1, 1901.
Brief general information on redwood.

383 LEMMON, JOHN G. 1902. How to Tell the Trees . . . The Cone Bearers. Oakland, Calif. 66 p. [Pocket size ed.]

Includes also "Forest Endowment of the Pacific Slope, Particularly California; also Some Elements of Forestry with Suggestions by Mrs. J. G. Lemmon." Brief general description of redwood, p. 20-21.

384 LEMMON, ROBERT S. 1952. The Best Loved Trees of America. The Amer. Garden Guild and Doubleday & Co., Inc., Garden City, New York. 254 p. Illus., index.

Contains a brief, general and popular description of Coast redwood, p. 188-191.

385 MacDOUGAL, DANIEL T. 1926. The Hydrostatic System of Trees. Carnegie Inst. of Wash., Wash., D.C. Pub. No. 373. 125 p. Tables.

Coast redwood was one of the species used in these experiments on the movement of sap in trees, but data and conclusions on redwood are minor because of its peculiar physiology and anatomy.

386 MacDOUGAL, DANIEL T., and EARL B. WORKING. 1933. The Pneumatic System of Plants, Especially Trees. Carnegie Inst. of Wash., Wash., D.C. June 1933. Pub. No. 441. 87 p. Tables.

Redwood discussed, p. 37-40, 78-79. "The gases in the redwood follow the general arrangement of the pines. However, liquids fill much of the older wood after a pattern not yet determined. The gases of the trunk of *Sequoia* included 2 to 9.4% of CO_2 and 8.5 to 17.4% of oxygen."

387 MacDOUGAL, DANIEL T., J. B. OVERTON, and GILBERT M. SMITH. 1929. The Hydrostatic-Pneumatic System of Certain Trees: Movements of Liquids and Gases. Carnegie Inst. of Wash., Wash., D.C. Pub. No. 397. 99 p. Illus., tables.

Studies of a physiological nature were carried out with several species of trees including Coast redwood, but because of its peculiar anatomical properties redwood was found undesirable for experimentation as compared with other species.

388 McMINN, HOWARD E., and EVELYN MAINO. 1935. An Illustrated Manual of Pacific Coast Trees. Univ. of Calif. Press, Berkeley. 409 p. Illus., index.

The section on *Taxodiaceae*, Redwood Family, p. 57-63, includes Coast and Sierra redwood.

389 MADDOX, RUFUS S., and ALMON E. PARKINS. 1925. Our Trees and How They Serve Us. C. Scribner's Sons, New York. 180 p. Illus.

Popular description of the characteristics of the trees and qualities of their wood, p. 55 and 114. General comparison of both redwoods, p. 54.

390 METCALF, WOODBRIDGE. 1955. Interesting Trees in California. Univ. of Calif. College of Agr., Agr. Ext. Serv., Berkeley. 29 p. Index. Processed.

Coast redwood, p. 2; Sierra redwood, p. 1; Dawn redwood (*Metasequoia glyptostroboides*), p. 9. Brief indication only as to location of specimens.

391 MOON, FREDERICK F. 1916. The Book of Forestry. D. Appleton & Co., New York. 315 p. Illus., index.

Brief, general description of Coast redwood on p. 196 and 291.

392 PEATTIE, DONALD CULROSS. 1939. Flowering Earth. G. P. Putnam's Sons, New York. 260 p. Illus.

Condensed in *Reader's Digest*, 36:126-143, March 1940. A popular and poetic description of the plant kingdom, with mention of *Sequoia* on p. 135 of the condensation, with particular reference to its geologic age.

393 PEATTIE, DONALD CULROSS. 1934. Trees You Want to Know.

Whitman Pub. Co., Racine, Wisc. 95 p. Illus.

Popular description.

394 PETERSON, P. VICTOR, and others. 1937. Native and Introduced Cone-Bearing Trees. In *Sci. Guide for Elementary Schools.* Calif. State Dept. of Educ., Sacramento. 3:16-19. April-May 1937. Illus.

The section describing "Redwood Family (Taxodiaceae)" includes Coast redwood, bald cypress, Cryptomeria japonica, umbrella pine, and Chinese fir.

395 REHDER, ALFRED. 1925. A Systematic Enumeration of the Conifers Cultivated in North America. In *The Cultivated Evergreens.* Macmillan Co., New York. p. 169-331. Illus.

Contains a botanical description of Coast redwood and the two varieties *adpressa* and *glauca,* p. 235-236. Similar material in his "Manual of Cultivated Trees and Shrubs," Macmillan Co., New York, on p. 25.

396 ROGERS, JULIA ELLEN. 1912. The Tree Book. Doubleday, Page & Co., New York. 589 p. Index.

Subtitled: A popular guide to a knowledge of the trees of North America and to their uses and cultivation. Contains also a brief geological history of Sequoia, and general botanical description of Coast redwood, p. 86-90.

397 SARGENT, CHARLES S. 1905. Manual of the Trees of North America. Houghton Mifflin Co., Boston and New York. 826 p. Illus., index.

Botanical descriptions of leaves, flowers, fruit, seeds, habit, bark and wood; distribution and miscellaneous observations, p. 68-69. Same information in the edition of 1926 on p. 61-62. A basic source book for descriptions of American forest trees.

398 SARGENT, CHARLES S. 1896. The Silva of North America. Vol. 10. Houghton Mifflin Co., Boston and New York. 159 p. Illus., index, biblio.

Subtitled: A Description of the trees which grow naturally in North America exclusive of Mexico. Drawings by Charles Edward Faxon.
Detailed information about the botanical features of the tree, p. 141-143. Under Sequoia, brief history of the tree and the origin of the name is given, p. 139-140. The works in which botanical descriptions of the tree may be found are listed under the scientific name and its synonyms; many references to additional material are also cited in the text. A prime reference book.

399 SETCHELL, WILLIAM A. 1916. Our Trees, and Our Other Trees. J. B. Farish, [San Francisco]. 55 p. Illus.

". . . being two informal lectures delivered in the circle, Bohemian Grove, Sonoma County. . . . Printed for members of the Bohemian Club." Good general material covering nomenclature, description of the tree, range, general ecology for both Coast and Sierra redwood, p. 7-25.

400 SEWARD, ALBERT C. 1932. The Redwoods of California: The Past in the Present. *Nature* [London]. 130:723-726. Nov. 12, 1932. Illus.

An excellent general article on the redwood of the present and its connection with Tertiary flora, by an Englishman who visited the northern groves with Prof. R. W. Chaney and the Big Basin area in Santa Cruz County with Prof. G. J. Peirce.

401 SHINN, CHARLES H. 1925. Let's Know Some Trees. U.S. Dept. Agr., Wash., D.C. Misc. Circ. 31. 38 p. Illus., index. (Rev. Dec. 1931.)

Brief description of the tree.

402 SOMERS, FRED M. 1889. Forests of the California Coast Range.

Harper's Mag. 79:652-660. Oct. 1889. Illus.

General description of the tree, its wood, cones and products, p. 653-654.

403 SUDWORTH, GEORGE B. 1908. Forest Trees of the Pacific Slope. U.S. Forest Serv., Wash., D.C. Oct. 1, 1908. 441 p. Illus.

Coast redwood on p. 138, 145-147. Botany in general is given: leaves, flowers, cones, range, size of tree. Range is given in detail: occurrence, climatic conditions, tolerance, reproduction.

404 SUDWORTH, GEORGE B. Notebooks, 1899-1904. 11 vols. MS. in University of California, Forestry Library, Berkeley.

The notebooks were kept by Sudworth, an early Forest Service botanist, while he was collecting material on the trees of California. The notes, which are intended to identify photographs he took, give detailed descriptions of vegetation and topography, and are interspersed with diary entries.

405 TOUMEY, JAMES W. 1909. Syllabus of Lectures on Dendrology Delivered at the Yale Forest School. Yale Univ., New Haven.

Characteristics of redwood, p. 39-40.

406 TURRILL, CHAS. B. 1876. California Notes. Edward Bosqui & Co., San Francisco.

Sequoia sempervirens, p. 68.

407 U.S. FOREST SERVICE. CALIF. REGION. 1936. Forestry Handbook for California, rev. ed. [In cooperation with the] Calif. State Chamber of Commerce, San Francisco. 47 p. [First printing 1930.]

Popular, but contains a good general description of the tree and the region, p. 11-12, 17.

408 WARREN, HENRY WHITE. 1901. How the Sequoias Grow. *Chautauquan.* 33:362-366. Illus.

Popular and general description of the Coast redwood of Santa Cruz County, and general comparison to Sierra redwood.

409 WILSON, CAROL GREEN. 1955. Alice Eastwood's Wonderland. Calif. Acad. Sci., San Francisco. 222 p. Illus.

Subtitled: The Adventures of a Botanist. Biography.

Paleobotany

410 ANON. 1911. California's Unique Forest. *Amer. Forestry* [*Amer. Forests*]. 17:499. Aug. 1911.

Brief note on the petrified forest in Sonoma County.

411 ANON. 1948. Miocene Occurrence of Sequoia and Related Conifers in the John Day Basin; Abstract. *Science.* 108:681. Dec. 17, 1948.

412 ANON. (A. C. Seward.) 1931. The Remains of an Ancient Isthmus. *Discovery* [London]. 12:158-160. May 1931. Illus., map.

The finding of impressions of leafy twigs, cones and wood, including a piece of fossil wood which appears to be a redwood burl of Sequoia on St. Lawrence Island in the Bering Sea, and its significance in relation to a "land bridge" between Asia and North America, considering the similarity of their past and present flora. Mentions evidence found in Chihli Province, Manchuria, pointing to a redwood forest during the Cretaceous period.

413 ANON. 1931. Remnant of an Ancient Land Bridge. Carnegie Inst. of Wash., Wash., D.C. *News Service Bul., School Ed.* 2:87-91. March 15, 1931. Illus., map.

Popular article telling of the finding of fossil Sequoias on St. Lawrence Island in the Bering Sea, and the conclusion of Dr. Ralph Chaney that the island represents the remnant of an ancient land bridge which connected Asia with North America, "a bridge over which the Redwood forest was essentially continuous during the first half of the Tertiary, at least."

414 ANON. 1948. San Francisco Chronicle Scores Unique Beat in China. *Editor & Publisher.* 81:10. April 10, 1948.

415 ANDREWS, HENRY N. 1936. A New Sequoioxylon from Florissant, Colorado. [Reprinted from] *Annals of the Missouri Bot. Garden.* 23:439-446. Sept. 1936. Illus., biblio.

A fossil stump 17 ft. in diameter and 10 ft. high, named *Sequoioxylon pearsallii,* n. sp. "The wood under consideration seems to resemble *Sequoia penhallowii* Jeffrey more closely than any other described species of Sequoian affinities," but differs "not only in its lack of horizontal and vertical resin canals, but also in a greater abundance of wood parenchyma and lack of pitting in the tangential walls of the ray cells."

416 BERRY, EDWARD W. 1905. The Ancestors of the Big Trees. *Popular Sci. Monthly.* 67:465-474. Sept. 1905. Illus.

The rise and spread of the Sequoias in geologic time. Relates Sequoia history to climate changes, animal life, and "floristic" changes; diagrams illustrate these changes.

417 BERRY, EDWARD W. 1920. The Ancestors of the Sequoias. *Natural Hist.* 20:152-155. March-April 1920. Maps.

Distribution during the Mesozoic and Cenozoic times, with maps.
Also in *Scientific American Monthly.* 2:207-208. November 1920.

418 BERRY, EDWARD W. 1929. The Flora of the Frontier Formation [Wyoming]. U.S. Geol. Survey. Professional Paper 158. p. 129-135.

Notes the occurrence of the fossil *S. reichenbachi* (Geinitz) Heer, p. 133.

419 BERRY, EDWARD W. 1916. The Geological History of the Gymnosperms. *Plant World.* 19:27-41. Feb. 1916. Maps.

Including the Sequoias; map illustrates the discussion of their relative abundance during the different eras.

420 BERRY, EDWARD W. 1905. An Old Swamp-bottom. *Torreya.* 5: 179-182. Oct. 1905.

Author found Sequoia of the Cretaceous in lignite beds in a New Jersey swamp.

421 BERRY, EDWARD W. 1929. A Revision of the Flora of the Latah Formation. In *Shorter Contributions to General Geol.,* U.S. Geol. Survey. Prof. Paper 154. p. 225-264. Index.

A record of the findings in the vicinity of Spokane, Wash. The wood and foliage of *S. langsdorfii* (Brongniart) Heer was recorded, as described by Knowlton.

422 BERRY, EDWARD W. 1923. Tree Ancestors. Williams & Wilkins Co., Baltimore. 270 p. Illus., index.

Subtitled: A Glimpse into the past. Chapter 7, "The Sequoias or Big Trees" compares Coast and Sierra redwood, describes the trees, gives their range and distribution, and botanical history, p. 39-55. Discusses the geologic history beginning in the Jurassic period, through the Cretaceous period, and with special emphasis on the various epochs, the Eocene, Oligocene, and Miocene of the Tertiary period.

423 BROWN, ROLAND W. 1943. Some Prehistoric Trees of the United States. *J. Forestry.* 41:861-868. Dec. 1943.

Primarily concerns genera not now represented by living trees in the U.S., but represented in eastern Asia. Contains a brief discussion of the migration of trees, including *Sequoia.* List of literature cited.

424 CAIN, STANLEY A. 1944. Foundations of Plant Geography. Harper & Bros., New York and London. 556 p. Maps, index.

Primarily concerned with plant migrations in past geologic time. The redwood forest is specifically discussed, p. 102-103, 107-110. There are several references to the Bridge Creek fossils. List of literature cited, p. 491-528.

425 CALIF. ACADEMY OF SCIENCES. 1948. Dawn Redwood Insects. *Amer. Forests.* 54:530. Dec. 1948.

Letter to the editor from the Academy stating that insects gathered from the Dawn Redwoods Entomological Expedition in China were arriving, and the hope that they will be related to insects of the Coast redwood.

426 CHANDLER, M. E. J. 1922. *Sequoia Couttsiae,* Heer, at Hordle [Hordwell] Hants. *Annals of Bot.* [London]. 36:385-390. July 1922. Illus.

Subtitled: A Study of the characters which serve to distinguish *Sequoia* from *Athrotaxis.* A description of the specimens found and why they are *Sequoia* instead of *Athrotaxis.* Drawings compare stomata, cones, cone-scales, and seeds of the three varieties. (See also a note in *Annals of Bot.,* 35: 457, July 1921, stating that specimens were found which enabled confirmation of the fossils of *Athrotaxis* as a species of *Sequoia.*)

427 CHANEY, RALPH W. 1940. Bearing of Forests on the Theory of Continental Drift. *Sci. Monthly.* 51:489-499. Dec. 1940. Illus.

Little mention of Coast redwood but explains in part the presence of redwood elsewhere than in California in past ages. Revised 1950 with change in nomenclature of fossils previously assigned to Sequoia.

427a CHANEY, RALPH W. 1948. The Bearing of the Living Metasequoia on Problems of Tertiary Paleobotany. *Natl. Acad. Sci. Proc.* 34: 503-515. Nov. 1948.

Fossils previously assigned to Sequoia are corrected to Metasequoia.

428 CHANEY, RALPH W. 1925. A Comparative Study of the Bridge Creek Flora and the Modern Redwood Forest. In *Studies of the Fossil Flora and Fauna of the Western United States.* Carnegie Inst. of Wash., Wash., D.C. Pub. No. 349. p. 1-22. Illus.

"The Bridge Creek flora is found in Oregon in beds of probable Oligocene age, and a similar group of plant fossils is scattered widely in the Tertiary of the northern hemisphere. It has as its most conspicuous element a group of species whose modern relatives are the important members of the redwood forest, now limited to the Coast Ranges of California."

429 CHANEY, RALPH W. 1927. Geology and Paleontology of the Crooked River Basin. In *Additions to the Paleontology of the Pacific Coast. . . .* Carnegie Inst. of Wash., Wash., D.C. Pub. No. 346. p. 45-138. Illus., index.

Subtitled: With Special reference to the Bridge Creek Flora. The fossils in North Central Oregon indicate that a flora once existed there which was the same as the flora at present in the northern redwood belt. The species *Sequoia langsdorfii* is commonly found.

430 CHANEY, RALPH W. 1925. The Mascall Flora — Its Distribution and Climatic Relation. In *Studies of the Fossil Flora and Fauna of the Western United States.* Carnegie Inst. of Wash., Wash., D.C. Pub. No. 349. p. 23-48. Illus., tables.

The Mascall flora is most common in the Great Basin portions of Washington, Oregon, Idaho, Nevada and California; *S. langsdorfii* is found extensively in the Mascall flora. Tables show distribution of fossils, and period.

431 CHANEY, RALPH W. 1949. Redwoods; Occidental and Oriental;

Abstract. *Science.* 110:551-2. Nov. 25, 1949.

432 CHANEY, RALPH W. 1934? Redwoods of the Past. Save-the-Redwoods League, [Berkeley, Calif.]. 8 p. Illus., map. (Revised June 1950.)

Fifty million years ago California was forested by trees which no longer live outside of the tropics; at this time redwoods were living northward around the Pacific basin. A map indicates the distribution of discovered fossil redwoods.

In the 1950 revision, some fossils previously classified as Sequoia are classified as Metasequoia.

432a CHANEY, RALPH W. 1950. Revision of fossil Sequoia and Taxodium in Western North America Based on Discovery of Metasequoia. Amer. Philos. Soc. Trans. (n.s.), 40:171-239.

433 CHANEY, RALPH W. 1930. A Sequoia Forest of the Tertiary Age on St. Lawrence Island. *Science.* 72 (ser. 2) : 653-654. Dec. 26, 1930.

The author reports the finding of specimens of leafy twigs of *Sequoia langsdorfii* and a few *Sequoia* cones discovered on St. Lawrence Island in the Bering Sea. (Note: The fossils referred to as *Sequoia* are *Metasequoia.*)

434 CHANEY, RALPH W. 1947. Tertiary Centers and Migration Routes. [Reprinted from] *Ecological Monographs.* 17:139-141. April 1947.

From a symposium on the "origin and development of natural areas with special reference to North America," a discussion of early centers of distribution of land plants of modern types. List of literature cited.

435 CHANEY, RALPH W. 1940. Tertiary Forests and Continental History. *Geol. Soc. of Amer. Bul.* 51: 469-488. March 1, 1940. Illus., map.

Address as retiring President of the Paleontological Society. Plates are of *S. langsdorfii* from beds of the older Tertiary on St. Lawrence Island, Alaska. Lists "Works to which Reference is made." (Note: Fossils referred to as *Sequoia* are *Metasequoia.*)

436 CHANEY, RALPH W., CARLTON CONDIT, and DANIEL I. AXELROD. 1944. Pliocene Floras of California and Oregon. Carnegie Inst. of Wash., Wash., D.C. Pub. No. 553. 407 p. Illus., index.

There are many references to Sequoia including *S. Affinis, S. langsdorfii, S. obovata,* and *S. sempervirens,* including "detailed information regarding the composition and distribution, both geographic and stratigraphic."

437 COCKERELL, T. D. A. 1909. Amber in the Laramie Cretaceous. *Torreya.* 9:140-142. July, 1909.

The author could not identify any conifers among the fossils he found, but says that a species of Sequoia (*longifolia Lx.*) was reported in the region of Boulder County, Colo.

438 COCKERELL, T. D. A. 1906. The Fossil Fauna and Flora of the Florissant (Colorado) Shales. *Colorado Univ. Studies.* 3:157-176.

Fossil stumps are assigned to *S. affinis,* a Miocene ancestor of the present Sequoias, p. 175.

439 COCKERELL, T. D. A. 1908. The Fossil Flora of Florissant, Colorado. *Amer. Museum of Natural Hist. Bul.* 24:71-110. Illus.

S. haydenii is listed as occurring abundantly: "Foliage is of two forms, and cones short, sublobular; allied to the modern *S. sempervirens,"* p. 78.

440 COCKERELL, T. D. A. 1910. The Miocene Trees of the Rocky Mountains. *Amer. Naturalist.* 44:31-47. Jan. 1910. Illus.

A description of the arborescent genera found in the Florissant beds of Miocene flora, and an attempt to correlate these with other American floras ascribed to the Miocene. One species of Florissant redwood, *S. haydenii,* is compared to species from other Miocene floras of the world and is concluded to have a separate identity.

441 CREECH, J. L. 1948. Propagation of Metasequoia by Juvenile Cuttings. *Science.* 108:664-665. Dec. 10, 1948.

442 CUNDY, PAUL F. 1946. A [Chemical] Comparison of Ancient and Modern Sequoia Wood. [Reprinted from] *Madroño.* 8:145-152. Jan. 1946. Illus., tables.

443 DORF, ERLING. 1933. Pliocene Floras of California. In *Studies of the Pliocene Paleobotany of California.* Carnegie Inst. of Wash., [Wash., D.C.]. Pub. No. 412. p. 1-112. Illus., index.

Fossils are discussed as found in localities from the Petrified Forest, Taylor Mountain, near Santa Rosa, and up the south fork of the Eel River. A systematic description of the findings, including occurrence, is given on p. 73. Plates are of *Sequoia langsdorfii.*

444 ENDO, SEIDO. 1933. A Neocene Species of Sequoia from Japan. *Bot. Gazette.* 94:605-610. March 1933. Illus.

Describes *Sequoia sempervirens Endl. fossilis Endo* found in Japanese deposits, and concludes that redwood was "widely distributed during the Miocene, but it was absent in Japan in the Middle Pliocene." List of literature cited.

445 GARDNER, JOHN STARKIE. 1883. A Monograph of the British Eocene Flora. Printed for the Palaeontographical Soc., London. 2 vols. Illus.

In vol. 2, *Gymnospermae,* p. 33-43, there is a dendrological description of the existing forms of Sequoia with their present range. However, the material primarily concerns other species which have been identified and described from fossil evidence. An excellent work in which these prehistoric forms are compared with those of the present.

446 GORDON, W. T. 1934. Plant Life and the Philosophy of Geology. British Assoc. for the Advancement of Sci. *Report.* 104:49-82.

An historical account of the development of geology as a science and a discussion of the present (1934) status of knowledge of fossil botany. Reference is made to fossils of the *Sequoia* type from Florissant, Colorado, p. 82.

447 GRAY, ASA. 1872. Sequoia and Its History. *Amer. Naturalist.* 6:577-596. Oct. 1872.

Also in *Scientific Papers of Asa Gray,* vol. 2, selected by C. S. Sargent; Houghton Mifflin & Co., Boston & New York, 1889, p. 142-173.

An address by the President of the Amer. Assoc. for the Advancement of Science, concerning plant geography and the genealogy of several species. Of Sequoia, the author shows that only 2 extant genera are closely related to it, but in the geologic past all 3 were associated together, whereas they now are in distinct parts of the world.

448 HAAS, O. 1949. Precedence of Modern Plant Names Over Names Based on Fossils. *Science.* 109:18-19. Jan. 7, 1949.

449 HANNIBAL, HAROLD. 1911. A Pliocene Flora from the Coast Ranges of California. *Torrey Bot. Club Bul.* 38:329-342. Illus.

Mention is made of Coast redwood found in the Pliocene beds near Portola.

450 HEER, OSWALD. 1880. Prof. Heer on Sequoia. *The Garden* [London]. 17:95. Jan. 24, 1880.

Brief reference to a paper read by Prof. Heer on the paleontological history of *Sequoia,* stating that it attained its greatest development in the Tertiary.

451 HENDERSON, JUNIUS. 1906. The

Tertiary Lake Bed of Florissant, Colorado. *Univ. of Colo. Studies.* 3:145-156. Map, biblio.

Description of the Florissant region; mention is made of many *Sequoia* stumps and logs found in the southern part of the lake basin.

452 HOLLICK, ARTHUR. 1930. Upper Cretaceous Floras of Alaska. U.S. Geological Survey. Prof. Paper 159. 123 p. Illus., index.

Contains description of the findings, comparison to other fossils, and location where found for *Sequoia ambigua, S. fastigiata, S. concinna, S. reichenbachi, S. rigida* (two varieties), *S. subulata, S. obovata,* and some unidentified cones. Plates show the specimens. See also Hollick, Arthur, 1928. The Story of the Redwoods. Journal N.Y. Botanical Garden. 29:[347]. November 1928. Fossil remains discovered in Old World before living tree was discovered in America.

453 JACKSON, SETH. 1944. Sequoias in Montana. *Amer. Forests.* 50:68-69. Feb. 1944. Illus.

Popular article with illustrations of the fossilized stumps.

454 JEFFREY, EDWARD C. 1904. A Fossil Sequoia from the Sierra Nevada. *Bot. Gazette.* 38:321-332. Nov. 1904. Illus.

Description of the microscopic structure of the fossil *S. penhallowii,* giving points of similarity between the fossil and Coast and Sierra redwood, and brief comparisons to other fossil forms.

455 JENNINGS, OTTO E. 1920. Fossil Plants from the Beds of Volcanic Ash Near Missoula, Western Montana. *Memoirs Carnegie Museum.* 8:385-450. Illus.

Describes two fossil species of Sequoia: *Sequoia oblongifolia* Jennings, sp. nov., and *Sequoia Haydenii* (Lesquereux) Cockerell.

456 JOHNSON, T., and JANE G. GILMORE. 1921. The Occurrence of a Sequoia at Washing Bay. *Royal Dublin Soc. Proc.* 16:345-352. Illus., biblio.

Description of the fossil, and comparison with Coast and Sierra redwoods. Plates with several photographs of the findings of *S. Couttsiae.*

457 KIRCHNER, WALTER C. G. 1898. Contribution to the Fossil Flora of Florissant, Colorado. *Acad. of Sci. of St. Louis Trans.* 8:161-188. Dec. 10, 1898.

Two species are listed: *S. affinis* and *S. langsdorfii,* p. 164.

458 KNOWLTON, FRANK H. 1926. Flora of the Latah Formation of Spokane, Wash. . . . In *Shorter Contributions to General Geology.* U.S. Geol. Survey. Professional Paper 140. p. 17-50. Illus.

Description of *S. langsdorfii* and a specimen tentatively described as *Sequoia* found near Spokane, p. 26-27. Plates show fossil findings.

459 KNOWLTON, FRANK H. 1902. Fossil Flora of the John Day Basin, Oregon. U.S. Geol. Survey, Wash., D.C. Bul. 204. 153 p. Index.

Descriptions of fossil Sequoias: *S. Heerii Lesq., S. angustifolia Lesq., S. Langsdorfii (Brgt.) Heer.,* and the cone from an unidentified specie.

460 KNOWLTON, FRANK H. 1927. Plants of the Past. Princeton Univ. Press, Princeton. 275 p. Illus.

Several references to fossil *Sequoias* and forms allied to *Sequoia,* found in North America, and in Swiss, Italian, German and Greek Miocene deposits.

461 KRÄUSEL, R. 1922. Is Taxodium Distichun or Sequoia Sempervirens the Characteristic Tree of the German Brown Coal? *Bot. Abs.* 11(1):87. Entry 514. Mar.-Apr. 1922.

It is concluded that the Sequoia was far more common than the cypress in the formation of the brown coal.

462 KRÄUSEL, R. 1920. Paleobotanical Notes. *Senckenbergiana.* [Frankfort]. 2:198-215. Dec. 1920. Biblio. [In German.]

Examination of the lignite from Senftenberg for *Taxodium* or *Sequoia,* on the assumption of the possibility of distinguishing them. Both occur but *Sequoia* is by far the most frequent.

463 LESQUEREUX, LEO. 1874. Contributions to the Fossil Flora of the Western Territories. U.S. Geol. Survey of the Territories, vols. 6, 7. Govt. Printing Office, Wash., D.C. Illus.

Part 1, vol. 6, on the Cretaceous Flora: descriptions of *S. formosa* Lesq. and *S. reichenbachi* Heer. Part 2, vol. 7, on the Tertiary Flora: descriptions of *S. affinis, S. langsdorfii, S. longifolia, S. angustifolia, S. heerii, S. brevifolia, S. acuminata, S. biformis.* Includes note as to where the fossils were collected; plates show leaves and twigs.

464 LINSLEY, E. GORTON. 1939. The Origin and Distribution of the Cerambycidae of North America. *Sixth Pacific Sci. Cong. Proc.* 4: 269-282. Maps, biblio.

Subtitled: With special reference to the fauna of the Pacific Slope. Mentions insects of the tertiary redwood flora, p. 275-277.

465 McCONKEY, DAREL. 1935. Prehistoric Tree-Travels. *Amer. Forests.* 41:162-164, 198-199. April 1935. Illus.

Popular account of the paleontologists' idea of the migration of trees as borne out by fossil remains in rocks.

466 MASON, HERBERT L. 1927. Fossil Records of Some West American Conifers. In *Additions to the Paleontology of the Pacific Coast.* . . . Carnegie Inst. of Wash., Wash., D.C. Pub. No. 346. p. 139-158. Illus., index.

Fossils of Coast redwood are found in the Pliocene of Mussel Rock, San Francisco and in the Berkeley Hills; *Sequoia langsdorfii* are found in Oregon.

467 MERRIAM, JOHN C. 1930. The Living Past. Charles Scribner's Sons, New York. 144 p. Illus.

This book is meant for recreational reading, but is about fossils and the experiences of the author in discovering them. Chapter 5, "A Living Link in History," p. 57-70, concerns the redwoods; this chapter also published as a pamphlet by the Save-the-Redwoods League, 1934; also in *Scribner's Mag.,* 83:733-737, June 1928, with title "Forest Windows."

468 MIKI, S. and S. HIKITA. 1951. Probable Chromosome Number of Fossil Sequoia and Metasequoia Found in Japan. *Science.* 113:3-4. Jan. 5, 1951. Illus., biblio.

469 NEWBERRY, JOHN S. 1882. Brief Descriptions of Fossil Plants, Chiefly Tertiary, from Western North America. *U.S. Natl. Museum. Proc.* 5:502-514.

Description of *Sequoia spinosa,* n. sp., collected at Cook's Inlet, Alaska.

470 NEWBERRY, JOHN S. 1898. The Later Extinct Floras of North America. U.S. Geol. Survey. Monographs. Vol. 35. 295 p. Illus.

Descriptions of fossil Sequoias, p. 18-22: *S. cuneata* Newb., *S. gracillima* (Lesq.) Newb., *S. heerii* Lesq., *S. nordenskioldii* Heer?, *S. spinosa* Newb.

471 SCHOPF, J. M. 1948. Precedence of Modern Plant Names Over Names Based on Fossils. *Science.* 108:483. Oct. 29, 1948.

472 SCHOPF, J. M. 1948. Should There be a Living Metasequoia? Interrelationship of Living and Fossil Plants. *Science.* 107:344-345. April 2, 1948.

473 SEWARD, ALBERT C. 1919. Fossil Plants. Cambridge Univ. Press.

London. In vol. 4, p. 346-365. Illus., biblio.

An excellent and complete description of the many species of *Sequoiineae* family, or those related to it, including periods and locations where the fossils were found. Microscopic identification is included. Extensive bibliography.

474 SEWARD, ALBERT C. 1931. Plant Life Through the Ages. Univ. Press, Cambridge. 601 p. Illus., biblio., index.

"A geological and botanical retrospect." Contains many references to the genera, and to Coast redwood particularly.

475 SEWARD, ALBERT C. 1935. Selections from the Story of Plant Migration Revealed by Fossils. *Science Progress* [London]. 30: 193-217. Oct. 1935.

Discusses briefly the present distribution of redwood and the Tertiary distribution of *S. langsdorfii,* and its bearing on Dr. J. C. Willis' age and area hypothesis.

476 STOPES, MARIE C. 1910. Ancient Plants. Blackie & Son, London. 198 p. Illus.

Brief mention of Sequoia on p. 86: it was present in Upper Cretaceous and Tertiary Periods, the species being similar or identical with those today; the range was formerly distributed over the globe.

477 SULLIVAN, THEO. A. 1933. Why Are the "Big Trees" So Big — A Glimpse Into Geology. *Flower Grower.* 20:340.

Popular and general treatment, partly based on the notion of a lost continent named "Lemuria," said to have existed in the Pacific Ocean. The east coast of "Lemuria" (now the Pacific Coast of the United States) grew redwoods; hence they will only grow in "Lemurian" soil.

478 THONE, FRANK. 1928. Reading the Travel Diary of the Giant Redwoods. *Literary Digest.* 97:53-54. May 5, 1928.

Similar title in *Science News Letter,* 13:97-98, 103-104. Feb. 18, 1928. Describes the work of Dr. Ralph W. Chaney and his search for species of fossil Sequoia in Manchuria. The author raises the question of the route of the migration of redwoods, which cannot be determined with present knowledge of distribution.

479 TORREY, RAY ETHAN. 1923. Comparative Anatomy and Phylogeny of the Coniferales. In *Mesozoic and Tertiary Coniferous Woods.* Boston Soc. of Natural Hist. *Memoirs.* 6:41-106. Illus.

A discussion of the historical development of structural paleobotany followed by an account of the histology and taxonomy of lignitic woods in the United States. Diagnostic data assembled from wood sections include information on annual rings, resin canals, wood rays, wood parenchyma, tracheids, and medulla. Ancestors of our present *Sequoia* are described under the genus name *Sequoioxylon.* The following species are described anatomically and in each case comparisons are made with the living species of *Sequoia: Sequoioxylon montanense, S. dakotense, S. laramense,* and *S. (Sequoia) burgessii* (Penhallow). In concluding, an attempt is made to trace the phylogeny of the main lines of the Coniferales. In this section a detailed discussion is given of the line of evolution which led to the *Sequoias.* The author mentions as a point of economic interest that the great Tertiary lignite or brown-coal deposits of the world are formed largely of *Sequoia* wood. Photomicrographs of sections of each specie.

480 WARDER, ROBERT B. 1883. The Silicified Stumps of Colorado. *Amer. Assoc. for the Advancement of Sci. Proc.* 31:398-399.

An abstract of the author's visit to Florissant in 1872. Contains a brief description of the Sequoia stumps, and the author's conjecture as to climate and topographic changes.

481 WEBBER, IRMA S. 1929. Pleistocene Woods from the Coast of California. [Univ. of Calif., Berkeley.] 64 p. Tables. Processed.

Thesis (Ph.D.) — Univ. of Calif. May 1929.

This work is an enlargement of an M.A. thesis by the author in 1927. It gives an anatomical description of the Carpenteria deposits of the Pleistocene.

482 YASUI, KONO. 1917. A Fossil of Sequoia from the Tertiary of Japan. *Annals of Bot.* [London]. 31:101-106. Jan. 1917. Illus.

Description of a new species resembling Coast redwood: "a wood occurring in the lignitic Tertiary coals of . . . Hondo is clearly closely related to Sequoia, both on the grounds of its traumatic and normal characters . . . [it is] further evidence for the widespread distribution of the genus *Sequoia* in the Tertiary of the Northern hemisphere." Plates are sections of *Sequoia hondoensis.*

483 ZEILLER, R., and P. FLICHE. 1903. Decouverte de Strobiles de Sequoia et de Pin dans le Portlandien. . . . *Compt. Rend.* 137: 1020-1022.

[Translated and abstracted from the French by H. C. Cowles in *Bot. Gazette,* 37:230, March 1904.]

"Zeiller and Fliche have discovered fossil remains of Sequoia in Portlandian beds near Boulogne-sur-mer. This is a discovery of great importance, since Sequoia has not previously been reported from Jurassic strata. Even at this early date the generic characters were well marked, and some of the specific characters of *Sequoia gigantea* were present."

Classification. Nomenclature

484 AMERICAN JOINT COMMITTEE ON HORTICULTURAL NOMENCLATURE. 1942. Standardized Plant Names, 2d ed.; ed. by Harlan P. Kelsey and William A. Dayton. J. H. McFarland Co., Harrisburg, Pa. 675 p.

Subtitled: "A . . . listing of approved scientific and common names of plants and plant products in American commerce or use." Sequoia and Sequoiadendron species and sub-varieties are listed on p. 585.

485 BAILLON, HENRI. 1894. Série des Athrotaxis. In *Histoire des Plantes,* vol. 12. Monographie des Coniferes, Hachette & Cie., Paris. p. 10-11. [In French.]

Taxonomic description of *Sequoia,* but under the generic name *Athrotaxis.*

486 BEHR, H. H. 1884. Synopsis of the Genera of Vascular Plants in the Vicinity of San Francisco, with an Attempt to Arrange Them According to Evolutionary Principles. Payot, Upham & Co., San Francisco.

Sequoia, p. 150-151.

487 BERRY, EDWARD W. 1904. Otto Kuntze on Sequoia. *Torreya.* 4: 153-154. Oct. 1904.

Kuntze claimed that by reason of priority and certain circumstances redwood should be called *Steinhauera minuta.* The author shows that this is "ridiculous."

488 BLOOMER, HIRAM G. 1867. On the Scientific Name of the "Big Trees." In *Calif. Acad. Natural Sci. Proc.* 3:399-401.

Primarily discusses Sierra redwood nomenclature, but some reference is made to Coast redwood.

489 BUCHHOLZ, J. T. 1939. The Generic Segregation of the Sequoias. [Reprinted from] *Amer. J. Bot.* 26:535-538. July 1939.

The author is convinced that Sierra redwood should be given separate generic status and bases his belief on the differences in the ovules at pollination, number of seeds per cone scale, times required for cone maturity, life period of cones, buds, and embryological differences. He proposes the scientific name *Sequoiadendron giganteum.*

490 CALIF. ACADEMY OF SCIENCES. 1856. [Minutes of Regular Meeting.] *Calif. Acad. Sci. Proc.* 1(ser. 1):51, 105. 1854-1857.

The minutes of the meeting of May 7, 1855 record that "Dr. Kellogg exhibited drawings of *Taxodium sempervirens* Don." The minutes of the meeting of Dec. 16, 1856 record that "Mr. Bridges donated a specimen of *Sequoia sempervirens.*"

491 CARRIÈRE, ÉLIE. A. 1855. Traité Général des Coniferes. Chez l'auteur, Paris. 656 p. [In French.]

Systematic classification, with synonyms, and description of the two species in the genera Sequoia with a comparison of their characteristics.

492 COLTMAN-ROGERS, CHARLES. 1920. Conifers and Their Characteristics. The Macmillan Co., New York. 333 p. Illus.

General statements about the origin of the name Sequoia, the form of the tree, the dimorphism of the leaves, and comparisons to Sierra redwood, p. 199-201.

493 DAYTON, WILLIAM A. 1943. The Names of the Giant Sequoia. *Leaflets of Western Bot.* 3:209-219. April 30, 1943.

Article on the botanical name of Sierra redwood, as affecting common usage, and including excerpts from letters by various authorities. The author prefers *S. gigantea.* Coast redwood is also mentioned.

494 DECAISNE, J. 1855. On Sequoia Sempervirens and S. Gigantea, followed by Remarks on Forest Administration. *Revue Horticole* [Paris]. 4(ser. 4):9-15. [In French.]

States that both redwood and "bigtree" belong in genus Sequoia, and "bigtree" is not Wellingtonia.

495 DOYLE, J. 1940. Gynospore Formation in *Sequoia Sempervirens. Nature* [London]. 145:900.

Letter to the editor indicating segregation of Coast and Sierra redwood into separate genera is fully justified.

496 ELLSWORTH, RODNEY S. 1924. The Giant Sequoia; an Account of the History and Characteristics of the Big Trees of California. J. D. Berger, Oakland, Calif. 167 p. Illus., biblio.

Popular. Primarily on Sierra redwood. Chapter 9, p. 134-156, on Sequoyah.

497 ENDLICHER, STEPHEN. 1847. Synopsis Coniferarum. Apud Scheitlin & Zollikofer, Sangalli. 368 p. Index.

Written in Latin. Brief botanical description, p. 197-198.

498 FRITZ, EMANUEL. 1953. Let's Get the Nomenclature of Redwood Cleared Up. Calif. Redwood Assoc., San Francisco. 3 p. May 4, 1953. Processed.

Popular paper on the history of the various names and the classification of Coast and Sierra redwood.

499 GOODSPEED, T. H., and CRANE, M. P. 1922. Chromosome Number in the Sequoias. *Bot. Abs.* 11(3): 338. Entry 2267. July-Aug. 1922.

This is a note questioning Lawson's statement that there are sixteen chromosomes in the gametophyte and thirty-two in the sporophyte of Sequoia sempervirens.

500 GUDDE, ERWIN G. 1953. The Two Sequoias. [Reprinted from] *Names,* pub. by Univ. of Calif., Berkeley. 1:118-127. June 1953.

A good study on the naming of the Sequoias and the origin of the name itself.

501 HASTINGS, CRISTEL. 1928. Naming the Sequoia. *Amer. Forests.* 34:202-205. April 1928. Illus.

Brief but fairly complete account of the various names applied to the Sequoias.

502 HASTINGS, CRISTEL. 1924. Sequoyah. *Overland Monthly.* 82: 447-448, 474. Oct. 1924.

Also in *Amer. Forests,* 34:138-140, 183. March 1928.

A popularly written biography of the Cherokee Indian, his life and work on the alphabet he invented.

503 HOOKER, WILLIAM J. 1841. Taxodium Sempervirens: Lamb.? In *Hooker's Icones Plantarum,* vol. 4, tab. 379. Longman, Orme . . . Longman, London.

The author is undecided whether his specimen is the same as Lambert's; he quotes Douglas' description. Plate shows drawing of the leaf and twig of the specimen.

504 HUGHES, G. 1927. First Sequoyah Who Gave His Name to Our Big Trees. *Sunset.* 59:25, 64. Sept. 1927. Illus.

Biography of the Indian chief.

505 JONES, G. NEVILLE. 1943. The Botanical Name of the Giant Sequoia. *Science.* 98 (new ser.): 406. Nov. 5, 1943.

A discussion of the differences between Coast and Sierra redwood and the claim that the latter should be set up as a new genus.

506 KEW. ROYAL GARDENS. 1895. Index Kewensis. Clarendon Press, Oxford [England], 1895. 2 vols., with supps.

The standard classification authority. Full title: "Index Kewensis; an enumeration of the genera and species of flowering plants, from the time of Linnaeus to the year 1885 inclusive. . . ." Ten supplements carry it on to 1950. References to *Sequoia* are found in: vol. 2, p. 883; supp. 2, p. 170; supp. 3, p. 164; supp. 10, p. 212.

507 LEMMON, JOHN G. 1897. The Big Trees of California. *Pac. Coast Wood and Iron [Pioneer Western Lumberman].* 28:174-175. Nov. 1897.

A letter to the editor, correcting information on nomenclature which had appeared in an article in an earlier issue ("California Big Trees," 28:13. July 1897.)

508 LEMMON, JOHN G. 1890. Conebearers of California. In *(Third) Bien. Rpt. of the Calif. State Board of Forestry, 1889-1890.* State Printing Office, Sacramento. p. 75-212. Index.

Report of the Botanist of the Calif. State Board of Forestry. Main discussion of redwood, p. 157-165. Includes a section on paleobotany, and a very informative discussion of the classification and the history of the nomenclature. Consumption figures are given for lumber from 1860 to 1890 (San Francisco market alone), and price ranges for pickets, rough and finished lumber (no date).

509 LEMMON, JOHN G. 1900. Handbook of West-American Conebearers. Fourth (Pocket) ed. [Pacific Press Pub. Co.] Oakland, Calif. July 1900. 116 p.

Coast redwood described, p. 68-69. This edition includes an appendix containing a brief history of the discovery and naming of the genus and species, p. 107-111.

510 LITTLE, ELBERT L., JR. 1953. Check List of Native and Naturalized Trees of the United States (including Alaska). U.S. Dept. of Agr. Washington, D.C. Agr. Handbook No. 41. 472 p. Index of common names.

Prepared under the direction of The Forest Service Tree and Range Plant Name Committee, and supersedes Misc. Circ. 92, issued in 1927.

511 LOOBY, W. J., and J. DOYLE. 1942. Formation of Gynospore, Female Gametophyte, and Archegonia in *Sequoia.* Royal Dublin Soc. *Sci. Proc.* 23:35-54. Illus.

Article on the differences between the two species; Coast redwood discussed, p. 35-48, Sierra redwood discussed, p. 48-52. The authors conclude that "The suggestion of Buchholz that the two types must be segregated in separate genera is sustained. His suggestion of the new generic title *Sequoiadendron* for *Sequoia gigantea* instead of Wellingtonia is temporarily not accepted. *S. gigantea* (Lindl.) Decn., the Big Tree, the Sierra Redwood, becomes again *Wellingtonia gigantea* Lindl. S. sempervirens (Lamb.) Endl., the Coast Redwood, the Redwood, retains this name." Drawings are of the fertilization processes for both species.

512 McKENNEY, THOMAS L., and JAMES HALL. 1838. The Indian Tribes of North America, new ed., ed. by F. W. Hodge. John Grant, Edinburgh, 1933. 3 vols.

Vol. 1, p. 130-145, contains a sketch of Sequoyah, with a colored portrait.

513 MOONEY, JAMES. 1900. Myths of the Cherokee. U.S. Bur. of Amer. Ethnology, 1897-1898, Wash., D.C. Vol. 19, part 1. 575 p. Index.

History of the Cherokee, including several references to Sequoyah; good index.

514 NUTTALL, THOMAS. 1865. The North American Sylva. vol. 2. Rice, Rutter & Co., Phila. 215 p. Index.

This volume also listed as "being the fifth volume of Michaux and Nuttall's North American Sylva." On p. 160-161 "Evergreen Taxodium" is described, concluding that it is "probably a different genus from *Taxodium.* . . ." Includes a quote from Douglas (*see* Douglas, "A David Douglas Letter.")

515 PHILLIPS, WILLIAM A. 1870. Se-Quo-Yah. *Harper's Mag.* 41:542-548. Sept. 1870. Illus.

A concise biography of the Indian chief.

516 RAVENSCROFT, EDWARD JAMES. 1884. Pinetum Brittanicum. W. Blackwood & Sons, Edinburgh and London. 3 vols. Illus.

Subtitled: A Descriptive account of the hardy coniferous trees cultivated in Great Britain. In vol. 3, p. 299-322, there is an article pertaining mainly to Sierra redwood *(Sequoia Wellingtonia)*, but containing some comparisons and a discussion of nomenclature.

517 SAUNDERS, CHARLES F. 1914. With the Flowers and Trees in California. Robert M. McBride & Co., New York, 1923. 286 p.

Chapter 7, "The Sequoia and Its Adventures in Search of a Name," p. 153-167; includes a description of the flora of the region, and gives a history of the discovery of both Coast and Sierra redwood. Popularly written.

518 SEEMANN, BERTHOLD. 1859. On the Mammoth Tree of Upper California. *Annals and Mag. of Natural Hist.* 3 (ser. 3):161-175. March 1859.

Although the article deals particularly with Sierra redwood, it also considers the early confusion between the two species. States that Coast redwood must have been the species noted by Douglas on his journey. Gives tabulated evolution of the scientific name, with the men concerned and references.

519 SPACH, EDOUARD. 1842. Species of Doubtful Classification. In *Histoire Naturelle des Végétaux.* Roret, Paris. Vol. 11, p. 353. [In French.]

Includes the genus *Schubertia* as a member of the family *Cupressinees; Schubertia sempervirens* is listed as a doubtful species in the group. A description of the characteristics is included, as well as the fact that its range is in northwest America.

520 SUDWORTH, GEORGE B. 1927. Check List of the Forest Trees of the United States, Their Names and Ranges. U.S. Dept. of Agr., Wash., D.C. Misc. Circ. 92. 295 p. Index.

Lists names in use, varieties distinguished in cultivation. Superseded by Agriculture Handbook No. 41, Check List of Native and Naturalized Trees of the United States (including Alaska), by Elbert L. Little, Jr., published in 1953.

521 WALPERS, WILHELM G. 1852. Annales Botanices Systematicae. Lipsiae, sumtibus F. Hofmeister. Vol. 3. [In Latin.]

A systematic classification placing Sequoia in the order Abietaceae or Pinus, p. 448.

522 WILSON, HERBERT EARL. 1928. The Lore and Lure of Sequoia [gigantea]. Wolfer Printing Co., Los Angeles. 132 p. Illus.

The book is on Sierra redwood, but contains a chapter on the Indian Sequoyah, a biographical sketch and picture, p. 89-100.

Form, Size and Age

523 ANON. 1914. California Redwood. *Timberman.* 15:41. Mar. 1914.

Survey of area where redwood is found and names of counties containing major portions. Most of those cut are from 400 to 800 years old, and oldest tree found during investigation was 1,370.

524 ANON. 1901. An Enormous Redwood. *Pac. Coast Wood & Iron* [*Pioneer Western Lumberman*]. 35:10. Jan. 1901.

Description of an expedition into the Big Basin, where dense forests of mammoth redwoods were found. The largest tree in California is in the Santa Cruz mountains, a redwood 350 feet high and 35 feet in diameter.

525 ANON. 1900. The Great Trees of the Pacific Coast. *Pac. Coast Wood & Iron* [*Pioneer Western Lumberman*]. 33:101. Mar. 1900.

One tree in Humboldt Co. yielded six 20-foot logs and one 16-foot log sawn from the stem. Contents of logs were 166,126 feet board measure.

526 ANON. 1919. A Motor Pullman Car Built of Solid Redwood. *Current Opinion.* 66(3):198. March 1919.

A house built on a truck from a redwood log.

527 ANON. 1914. News Miscellany of the Lumber World: Pacific Coast News. *Lumber World Rev.* [*Chicago Lumberman*]. 27:41. Oct. 25, 1914.

News item about a tree to be felled: 380 ft. in height, 26 ft. in diameter 7 feet above the ground. Scales 334,000 ft.; 50% to sell at $35 M, 30% at $18, the remainder at $8. Total value at more than $9,000.

528 ANON. 1891. Notes. *Garden and Forest.* 4:396. Aug. 19, 1891.

Large redwood plank goes to World's Fair.

529 ANON. 1893. One of the Largest Redwood Trees Ever Felled in California. *Garden and Forest.* 6:260. June 14, 1893.

Cut near the Eel River about ten miles from Scotia.

530 ANON. 1943. Redwood Log Scales 140,800 Feet. *West Coast Lumberman* [*Lumberman*]. 70:56. Illus.

Account of a tree 334 ft. in length felled by Union Lumber Co. Two saws, one 12-ft. and one 10-ft., were welded together to fell the tree.

531 ANON. 1926. A Redwood Tree Scaling 361,366 Feet of Lumber. *Timberman.* 27:109. Oct. 1926.

Complete dimensions of tree and total amount of lumber given.

532 ANON. 1913. Sample Redwood Tree. *Pioneer Western Lumberman.* 60:13. Dec. 15, 1913.

Large tree cut in Humboldt Co.

533 ANON. 1927. [Section of California Redwood.] *Amer. Lumberman.* 2728:35. Aug. 27, 1927. Illus.

Photograph of a section of a tree "1995 years old" being crated for shipment to France as a gift of the Calif. American Legion.

534 ANON. 1933. Tallest Redwood Tree. *Timberman.* 34:78. Feb. 1933.

Brief note on two trees in Humboldt Co., one near Dyerville Flat, 364 feet tall, one near Elk Grove camp, 90 feet in circumference.

535 ANON. 1931. Tallest Tree Dedicated. *Amer. Forests.* 37:654, 702. Nov. 1931. Illus.

The world's tallest tree, a redwood 364 ft. high, located in North Dyerville Flat, Humboldt County, was dedicated to the founders of the Save-the-Redwoods League. The article also contains excerpts from Dr. J. C. Merriam's dedicatory address.

536 ANON. 1955. A Tree in Palo Alto. *Newsweek.* 46:90. Dec. 5, 1955.

Brief news item on the artificial fog system rigged for the redwood which is the landmark for Palo Alto, Calif.

537 ANON. 1918. Truck Body Hollowed Out of a Redwood Tree. *Amer. Lumberman.* 2232:73. Feb. 23, 1918.

Also in *Sci. Amer.* 118:191. March 2, 1918.

538 BARTLETT, WILLIAM C. 1880. A Breeze from the Woods. [Oakland Evening Tribune Office, Oakland, Calif.] 212 p.

Tells of a hollow tree in Santa Cruz County in which a wood-chopper and his family spent a winter, p. 142-143.

539 BERRY BROS., LTD. 1893. Description of the Mammoth Redwood Plank Owned by Berry Bros. . . . World's Columbian Exposition [Detroit, 1893?]. 1 p. Illus.

A single sheet of advertising; tells of a plank cut in Humboldt County in 1890 for the World's Fair at Chicago. The tree was said to be 35 feet in diameter and 1500 years old. The plank was 16 ft. 5 in. wide, 12 ft. 9 in. long, 5 in. thick.

540 BOHANNAN, R. D. 1917. Laws of Tall Tree Growth Investigated Mathematically. *J. Forestry.* 15: 532-563. May 1917.

References are made to redwood. States that redwoods are about ¼ as high as the greatest possible value in still air.

541 BRISCOE, RUFUS JANVIER. 1914. The Two Oldest Trees, One Dead, One Living. Riverside, Calif. [Press of Young and McCallister, Inc., Los Angeles.] 63 p. Illus.

Privately published "account of the fossil trees of northern Arizona and of the big trees of California." Describes the scheme he used to determine the age of Sierra redwood (6864 years) and a Coast redwood (3600 years); very inaccurate information.

542 CANTRELL, M. C. 1929. The Story of Redwood. *Timberman.* 31:168. Dec. 1929. Illus.

The article reviews a few general facts about both Sequoias. The photograph is of a "falling giant," a Coast redwood 15 ft. in diameter and 334 ft. tall, having 1051 annual rings.

543 DOUGLAS, DAVID. 1831. A David Douglas Letter. In *Calif. Historical Soc. Q.* 2:223-227. Oct. 1923.

A personal letter probably written to Sir William Hooker, addressed from "Monterey, Upper California, Nov. 20, 1831." He wrote: "I have measured them frequently 270 feet long, 32 feet round, 3 feet from the ground!! Some few I saw upwards of 300 feet long, but none of greater thickness than those instanced. I have fine specimens of these and seed also."

544 FERNOW, BERNARD E. 1919. Why Should a Tree Die? *Canadian Forestry J.* 14:11. Jan. 1919.

Brief note on the age of trees, mentioning the size and age of redwoods.

545 FITZPATRICK, E. J. 1919. The Great Redwoods of California. *Mid-Pacific Mag.* 17:575-577. June 1919.

A popular article noting the tremendous size attained by the genera.

546 FRITZ, EMANUEL. 1930. Lumber for Twenty Homes in a Single Tree. *Amer. Forests.* 36:711. Nov. 1930. Illus.

Popular article telling of a tree measured by Capt. A. W. Elam which was 308 ft. high, 20 ft. d.b.h., had an 11-inch bark, and was 18 ft. 2 inches in diameter for the woody portion. This tree should contain over 360,000 bd. ft. after due allowance for some breakage and for the heavy bark.

(This tree was felled in the early 1940's and found to be so extensively decayed that it smashed flat and was not salvable.)

547 FRITZ, EMANUEL. 1951. Spike-topped Trees. *Redwood Region Logging Conf. Bul.*, Brizard-Matthews Machinery Co., Eureka, Calif. p. 8. May 1951.

Brief general article on the reasons for spike tops.

548 JOURDAN, J. W. 1932. Accurate Surveys Determine Sizes of Rival Big Trees. *Engineering News-Record.* 108:254-255. Feb. 1932. Illus.

549 KNORR, F. 1932. What Causes Twisted Trees? *J. Heredity.* 23:49-52.

The results of Knorr's investigations disprove the belief that twisting is due either to the action of wind or the "pull of the sun"; he concludes that in all probability the tendency to produce twisted grain is inherited in trees.

550 METCALF, WOODBRIDGE. 1949. Data on Large Redwood, Mendocino County. Univ. of Calif. College of Agr. Agr. Ext. Serv., Berkeley. 1 p. Illus.

Gives information regarding the section of a large tree placed at the entrance to the Union Lumber Co. Mill, Fort Bragg, Calif.

551 PARKS, WALTER H. 1952. Redwood Log Characteristics. Calif. Redwood Assoc. Redwood Research Rpts. Research Project 1.20121-B, -C, -D. v.p. Tables. Processed.

Three reports give the following results: (1) Taper increases as diameter increases when height is disregarded; the rate of increase in taper becomes greater as diameter increases; is greatest in butt logs, lowest in middle portion of the tree. (2) Sapwood thickness increases as diameter increases regardless of height; and increases as height increases; in butt logs it follows the same pattern. (3) Bark thickness increases as diameter increases regardless of height; decreases as height increases; on butt log it follows same pattern as for logs.

552 SARGENT, CHARLES S. 1897. The Redwoods — A Suggestion. *Garden and Forest.* 10:41-42. Feb. 3, 1897.

The first part is in the form of an editorial and is a general description of the tree and the region, with emphasis on the need to purchase redwood lands for parks. In a second part, entitled "The Height of the Redwood," the author tells of measuring a tree at Scotia, Calif., on Sept. 7, 1896, with Gen. Henry L. Abbot and John Muir. The felled tree was "662 years old, with a trunk diameter of 10 feet 5 inches at 6 feet above ground . . . it measured 230 feet to the first limb . . . and 340 feet to the top of the stem." States that since this tree was smaller in diameter than many others in the area "some large Redwoods must have lived through several centuries and reached a much greater height."

See also *Erythea.* Vol. 5, p. 43.

553 TIEMANN, HARRY D. 1935. What Are the Largest Trees in the

World? *J. Forestry.* 33:903-915. Nov. 1935. Illus.

The author has given the subject thorough study, particularly as to running down reports and checking on statements. The 364-ft. Founders' Tree on Dyerville Flat is regarded as the tallest. Mention is made of a Douglas fir reported at 417 ft. high, felled by a George Carey in 1895 at Vancouver, B.C.; further investigation seems to indicate this is unsubstantiated (see note by author in *J. Forestry,* 35:791-792. Aug. 1937).

Parts of the Tree

554 ANON. 1896. Flowers of Conifers. *Gardeners' Chronicle* [London]. 19 (ser. 3) : 556. Illus.

Brief note comparing female flowers of Coast and Sierra redwood, with sketches.

555 BUCHHOLZ, J. T. 1939. The Embryogeny of Sequoia Sempervirens with a Comparison of the Sequoias. [Reprinted from] Amer. J. Bot. 26:248-257. April 1939. Illus.

The taxonomic differences between the two redwoods are discussed. Drawings show the cells during the fertilization process. List of literature cited.

556 BUCHHOLZ, J. T. 1937. Seed-cone Development in Sequoia Gigantea; Abstract. *Science.* 85:59. Jan. 8, 1937.

557 BUCHHOLZ, J. T., and MARGARET KAEISER. 1940. A Statistical Study of Two Variables in the Sequoias — Pollen Grain Size and Cotyledon Number. [Reprinted from] *The Amer. Naturalist.* 74: 279-283. May-June 1940. Table.

Based on mean diameters, the volume of Coast redwood pollen grains is 4 times that of Sierra redwood. The number of cotyledons in Coast redwood is predominantly 2, occasionally 3; in Sierra redwood predominantly 4, but varying from 2 to 6. Coast redwood is a polyploid.

558 BUTTS, DOROTHY, and J. T. BUCHHOLZ. 1940. Cotyledon Numbers in Conifers. *Illinois State Academy of Sci. Trans.* 33: 58-62. Dec. 1940. Biblio.

Gives the number of cotyledons of Coast redwood as 2-4, with a mean of 2.14; for Sierra redwood, 3-6 with a mean of 3.68.

559 CANNON, W. A. 1926. Studies on Roots. Carnegie Inst. of Wash., Wash., D.C. *Year Book No. 25.* p. 317-325.

Root systems of redwood seedlings and of shoots vegetatively reproduced are described and contrasted. A discussion of root systems of first, second, and so on, generations of vegetatively reproduced trees or tree-groups is given. The absence of root hairs in the species is discussed as an important, if not a deciding factor, in delimiting the distribution of redwood. Winter rains are demonstrated to have a great effect on soil temperatures and in turn on redwood root growth.

560 CHANG, YING-PE. 1954. Bark Structure of North American Conifers. U.S. Dept. of Agr., Wash., D.C. Tech. Bul. No. 1095. Dec. 1954. 86 p. Illus.

Section on redwood bark, p. 47-50, supplementing the work of Irving Isenberg (1943, "The Anatomy of Redwood Bark"). Contains also keys to the families and genera based upon the macroscopic and microscopic structures of their barks. Extensive list of literature cited.

561 CRANE, MILDRED P. 1918. Comparative Studies of the Cytology of Sequoia Gigantea and Sequoia Sempervirens. Berkeley. 26 p. Biblio. Processed.

Thesis (M.A.) — Univ. of Calif. May 1918.

Largely a discussion of the behavior of chromatin bodies in pollen cells and root tip cells; number of chromosomes. Literature cited does not pertain to redwood.

562 DARK, S. O. S. 1932. Chromosomes of Taxus, Sequoia, Cryptomeria and Thuya. *Annals of Bot.* [London]. 46:965-977. Oct. 1932.

"Because so many chromosomes were present in the narrow cells of the root tip of redwood it was not possible to disentangle any division accurately, and all that could be done was to determine that the number was near to fifty." The author considers redwood to be a tetraploid species, "a condition possibly connected with the remarkable powers of regeneration shown by the stumps of felled trees." (See also: Karl Sax, 1933, "Chromosome Number. . . .")

563 EASTWOOD, ALICE. 1895. On Heteromorphic Organs of Sequoia Sempervirens Endl. *Calif. Acad. Sci. Proc.* 5(2d series):170-176. Nov. 18, 1895. Illus.

Author finds that trees above 2 to 3 ft. in diameter have invariably the two kinds of leaves: scale-like in the top and broad distichous leaves lower down. She believes this may be because the tree belongs to a tribe, *Taxodineae*, intermediate between *Cupressineae* and *Abietineae*, having leaves of corresponding form to those of the two forms possessed by redwood, respectively.

564 FRITZ, EMANUEL. 1934. The Story Told by a Fallen Redwood. Save-the-Redwoods League, Berkeley. 7 p. Illus.

"At Richardson Grove, Humboldt State Redwood Park, California, the stump and butt log of a fallen redwood are being preserved as an educational exhibit. The tree measured 12 feet in diameter at breast height and was 320 feet high. Its life history, extending back over 1200 years, may be understood by studying its growth rings and its root system. The stump is exceptionally instructive also in revealing the story of the building up of a river bench."

565 HILL, T. G., and E. DE FRAINE. 1908. On the Seedling Structure of Gymnosperms. *Annals of Bot.* [London]. 22:689-712. Oct. 1908. Illus.

The structure of the seedlings of Coast and Sierra redwood is given and the two species may be compared; variations are noted and abnormalities are pointed out, p. 706-709. Diagrams.

566 HUTCHINGS, JAMES M. 1878. Pacific Coast Seed Catalogue. J. M. Hutchings & Co., San Francisco. 14 p.

Lists most of the trees of the Pacific Coast, with a brief description, and quotes the price of seed per pound for each. Cost of Coast redwood seed listed as $4.00 per lb.

567 ISENBERG, IRVING H. 1943. The Anatomy of Redwood Bark. [Reprinted from] *Madroño.* 7:85-91. July 1943. Illus.

A careful anatomical study, made at the Institute of Paper Chemistry, Appleton, Wisc. for The Pacific Lumber Co., Scotia, Calif. Photomicrographs. (Note: This was Project 488-T2, Institute of Paper Chemistry, 1939, and had the title "A Fundamental Botanical Study of Redwood Bark.")

568 JENNINGS, O. E. 1916. Coloring [tannin] in Redwood Cones. *Amer. Forestry* [*Amer. Forests*]. 22:37. Jan. 1916.

569 JEPSON, WILLIS L. 1896. Miscellaneous Notes and News. *Erythea.* 3:128.

Remarks on the foliage of Sequoia sempervirens.

570 KEITH, HARRY G. 1923. Dehydration Tests on Redwood Cones. [Berkeley.] 13 p. Processed.

Methods, factors, and results in the extraction of seeds from the cones to reduce the time without lowering germination per cent. (Note: Term paper written for Forestry 199, at Univ. of Calif., School of Forestry.)

571 LAND, W. J. G. 1904. The Staminate Strobilus. *Bot. Gazette.* 38:2-3. July 1904.

Strobilus of Sequoia sempervirens with upper part ovulate and lower part staminate is reported.

572 LAWSON, ANSTRUTHER A. 1904. The Gametophytes, Archegonia, Fertilization, and Embryo of Sequoia Sempervirens. *Annals of Bot.* [London]. 18:1-28. Jan. 1904. Illus.

"It is . . . the object of the present work to give a connected account of the events leading to the development of the gametophytes, sexual organs, fertilization, and embryo, thus completing as far as possible the life-history of the *Sequoia sempervirens.*" Methods of research are stated. Drawings were done with the aid of a camera lucida. List of literature cited.

Reviewed by J. M. Coulter in *Bot. Gazette.* 37:234-236. March 1904.

573 LOTT, HUGH C. 1923. The Production and Viability of Redwood Seed. [Berkeley, Calif.] 32 p. Tables. Processed.

Thesis (M.S.) — Univ. of Calif. May 1923.
Includes discussion of the methods and findings.

574 MacDOUGAL, DANIEL T. 1937. Root Systems and Volumes of Giant Sequoias. *Amer. J. Bot.* 24: 1-2. Jan. 1937.

Primarily a study of Sierra redwood. The author states that "as a result of observations extending over a decade, the volume of the root-system of the Coast redwood is taken to be equivalent to about 1/10 of that of the trunk and branches."

575 PEIRCE, GEORGE J. 1901. Studies on the Coast Redwood, Sequoia Sempervirens, Endl. In *Calif. Acad. Sci. Proc.*, 3d Series. *Botany* 2 (3):83-105. Issued April 4, 1901. Illus., biblio.

In three parts: 1. Vegetative mode of reproduction; the author disagrees with H. Gannett (*Natl. Geog. Mag.*, 10:145-149. May 1899) who stated that redwood is not reproducing. 2. Peculiarities of some vegetatively produced young redwood: Fasciation; Albinism. 3. The significance of the white redwoods in connection with our conceptions of parasitism and of heredity. Plate shows parts of leaves, of which "all [13] figures were drawn with an Abbé camera lucida."

576 SAX, KARL, and HALLY J. SAX. 1933. Chromosome Number and Morphology in the Conifers. Harvard Univ. Arnold Arboretum. *J. of the Arnold Arboretum.* 14:356-375. Oct. 1933.

Mentions Dark's article ("Chromosomes of Taxus, Sequoia . . . ," 1932) finding about 50 chromosomes in root tips of redwood. This is confirmed, finding more than 40 although the exact number is unknown. Polyploidy, although rare in conifers, is confirmed in redwood.

577 SHAW, WALTER R. 1896. Contribution to the Life-history of Sequoia Sempervirens. *Bot. Gazette.* 21:333-339. June 1896. Illus.

Detailed microscopic description of the reproductive elements. Development of the sexual generation (prothallium); the flowers, sporangia, female prothallium, and the pollen-tube are the principal subjects. The evidence points to the conclusion that Sequoia is "a most primitive group of modern Coniferae." Drawings of cell sections are sketched with an Abbé camera lucida.

578 SHAW, WALTER R. 1896. Sexual Phase in Coast Redwood. *Erythea.* 4:153.

579 SIGGINS, HOWARD W. 1933. Distribution and Rate of Fall of Conifer Seeds. [Reprinted from] *J. of Agr. Research.* 47:119-128. July 15, 1933. Table.

Gives data on rate of fall of redwood seed: average rate of fall 8.6 ft. per second; average weight of good seeds 0.0074 grams.

Burls

580 ANON. 1929. Burls: How They Are Cut and Marketed. *Timberman.* 30:40-41. June 1929. Illus.

Discussion of the methods of manufacture, characteristics of the various burls, and uses. Includes a section on redwood burls.

581 ANON. 1945. Giant Burl of Humboldt. *Timberman.* 46:62, 64. Nov. 1945. Illus.

Details of a redwood burl that produced 60 tons of fine veneer stock, discovered in 1944 on the Big Lagoon timber track of the Hammond Lumber Co.

582 ANON. 1938. 1937 Log and Burl Exports. *Timberman.* 39:28-30. Aug. 1938. Illus., table.

Brief description, including redwood burls. Table gives poundage of redwood burls shipped from Oregon and the country of destination.

583 ANON. 1917. Remarkable Redwood Burl. *Calif. Forestry.* 1(7): 53. Nov. 1917.

Description of a burl nine feet in diameter weighing nearly seven tons. Material appeared earlier in the *Pioneer Western Lumberman.*

584 ANON. 1947. A Specialist in Burls. *Timberman.* 48:66, 68, 70. April 1947. Illus.

Including shipments of redwood burls by Alfred A. Loeb of Portland, Oregon.

585 CHURCH, T. A. 1914. The Redwood Burl Industry in California. *Lumber World Review* [*Chicago Lumberman*]. 27:21-22. Sept. 10, 1914. Illus.

Description of the Stump House at Eureka, Calif., and the burl novelties produced by Rodney Burns.

586 FRITZ, EMANUEL. 1928. Redwood Burls. *Amer. Forests.* 34:10-11, 48. Jan. 1928. Illus.

Popular account of the growth of burls, and their uses for lumber and novelties. Photographs of burls growing on redwood trees, and one of a longitudinal section through a burl and the trunk of a virgin redwood tree.

587 FRITZ, EMANUEL. 1950. Redwood Burls. *Redwood Region Logging Conf. Bul.,* Brizard-Matthews Machinery Co., Eureka, Calif. p. 6-7.

Brief, popular article on the growth of burls and their commercial use.

588 FRITZ, EMANUEL. 1936. Redwood Vitality. *Amer. Forests.* 42: 551-553. Dec. 1936. Illus.

Popular article on the resistance of redwood to fire, insects, diseases, and its tenacity of life by its sprouting ability.

589 McMILLAN, F. 1925. Redwood Burl—The Miracle Plant of California. *Garden and Home Builder.* 42:292-294. Dec. 1925. Illus.

Letter to the editor, with illustrations of burls as house plants.

Growth Rings

590 ANON. 1877. The Story of the Trees. *Humboldt Times Daily,* Eureka, Calif. 8(20):2. July 25, 1877.

Method of determining whether the seasons from year to year were wet periods or periods of drought, by the character of the annual rings of growth; the record of the trees found to coincide exactly with man-kept records.

591 BEHRE, C. EDWARD. 1925. Notes on the Cause of Eccentric Growth in Trees. *J. of Forestry.* 23:504-507. May & June, 1925.

Discussion of the theory that peripheral distribution of food materials is quite limited and for this reason absence of green branches on one side of the stems results in wood being formed only part way around.

592 DOUGLASS, A. E. 1937. Tree Rings and Chronology. *Univ. of*

Arizona Bul. 8:1-36. Oct. 1, 1937. (Its *Physical Sci. Bul. No. 1.*)

Brief mention of "Sequoia Chronologies" refers to the studies of Ellsworth Huntington in 1911-1912, on Sierra redwood stumps, p. 12, 21.

593 FRITZ, EMANUEL. 1940. Problems in Dating Rings of California Coast Redwood. *Tree-Ring Bul.* 6: 19-21. Jan. 1940. Illus.

Notes on discontinuous growth rings and on spiralled compression wood.

594 FRITZ, EMANUEL, and JAMES L. AVERILL [AVERELL]. 1924. Discontinuous Growth Rings in California Redwood. *J. Forestry.* 22:31-38. Oct. 1924. Illus., biblio.

Also in *Timberman.* 26:156, 158, 160. Jan. 1925.

Paper resulted from asymmetry of stems noticed while making a growth study in second growth in which discontinuous rings were prevalent. Ring counts on different radii of the same section gave varying ages. An injury to the crown on one side of a tree results in producing a dormancy of the cambium on that side, which in return is responsible for the discontinuous rings. The rings do not merge but for a time cease to exist. Discontinuous rings are a source of error in trees whose ages are found by increment borings. Reproduction from sprouts in clumps develop one-sided crowns which cause discontinuous rings. General anatomy of discontinuous ring cells is given. Photomicrograph.

See also Behre, C. E. 1925. Notes on Eccentric Growth. *J. Forestry.* 23:504-507. May-June 1925.

595 HAASIS, FERDINAND W. 1934. Diametral Changes in Tree Trunks. Carnegie Inst. of Wash., Wash., D.C. Pub. No. 450. 103 p. Illus., tables, biblio.

Diametral changes other than growth in plant stems, using the dendrograph, were made in several trees, including redwood. Changes include: diurnal fluctuations, seasonal shrinkage, traumatic and prolonged shrinkage, diametral increases.

596 HAASIS, FERDINAND W. 1932. Seasonal Shrinkage of Monterey Pine and Redwood Trees. [Reprinted from] *Plant Physiology.* 7:285-295. Illus.

Redwood exhibits fall and/or winter swelling preceded by a summer or fall shrinkage. This is caused by water relations and is not believed due to cell division. This activity is closely related to the diurnal fluctuations described by MacDougal. (See MacDougal, D. T., 1921, Growth in Trees.)

597 HAASIS, FERDINAND W. 1933. Shrinkage and Expansion in Woody Cylinders of Living Trees. [Reprinted from] *Amer. J. Botany.* 20:85-91. Feb. 1933. Illus.

Dendrographic studies on a pine indicate shrinking in the heartwood while the entire woody cylinder and entire stem swell. Measurements on a redwood indicate the same relations probably hold true. Brief statement of the same study, with title "Reversible Variations in Diameter of Woody Cylinder of Trees" in Carnegie Inst. of Washington, *Year Book No. 30,* p. 244.

598 HAASIS, FERDINAND W. 1933. Shrinkage in a Wind-Dwarfed Redwood. *J. Forestry.* 31:407-412. April 1933. Tables.

"The excess of transpiration over intake of water in an undernourished wind-dwarfed redwood tree may cause a drain upon the water stored in its tissues; the cumulative desiccation may result in a net reduction in diameter over a period of years. Under such conditions also, it appears likely that stem diameter growth may proceed close to living branches but become dormant at lower points." Similar material in his article "Shrinkage in a Wind-Dwarfed Redwood and in a Decapitated Redwood," in *Growth in Trees,* Carnegie Inst. of Wash., *Year Book No. 31, 1931-1932,* p. 200-201; *Year Book No. 32,* p. 191-192.

599 HUNTINGTON, ELLSWORTH. 1914. The Climatic Factor. Carnegie Inst. of Wash., Wash., D.C. Pub. No. 192. 341 p. Tables, index.

A study of the climatic variations of historic times. This "is an attempt to determine the sequence and character of such variations on the basis of evidence in the drier portion of America from Guatemala on the south to Idaho on the north." Variations found in this study agreed with changes recorded in Europe and Asia, and the conclusion is that "such changes have taken place and that they have been of a pulsatory nature." Chapters 13 and 14 present material on the growth curves of Sequoias, primarily Sierra redwood. A table on p. 325 gives the average growth by decades of Coast redwood from 1321 to 1900 A.D.; a chart on p. 133 compares this growth with that of other species of American trees.

600 HUNTINGTON, ELLSWORTH. 1912. The Secret of the Big Trees [Sierra Redwood]. *Harper's Mag.* 125:292-302. July 1912. Illus.

Popular account of the author's study of the growth of Sierra redwood as affected by climate, which he correlated with an independent study done in Asia from historical records two years previously. Close agreement between the two studies was found; the famine in the days of the prophet Elijah was evidenced by dry conditions unfavorable to Sierra redwood growth, and there tended to be similar findings throughout. The oldest tree counted was 3150 years of age; only 3 trees were over 3000 years, 40 were over 2000 years.

601 MacDOUGAL, DANIEL T. 1924. Dendrographic Measurements. In *Growth in Trees and Massive Organs of Plants.* Carnegie Inst. of Wash., Wash., D.C. May 1924. Pub. No. 350. p. 1-88. Tables.

Results of measurements started in 1921 on 5 redwood trees located near Carmel, Calif., p. 47-50, 84. Findings summarized as follows: "The tips of some of the branches awaken before the cambium. The seasonal activity of the cambium varies from 128 to 202 days. Pauses in enlargement may occur in short periods of high temperature and low relative humidity." Facsimile of weekly dendrograph records of one redwood. The relation of growth between a "parent" tree and its root sucker were studied. (*See also* F. Shreve, The Growth Record in Trees.)

602 MacDOUGAL, DANIEL T. 1921. Growth in Trees. Carnegie Inst. of Wash., Wash., D.C. Pub. No. 307. 41 p. Illus.

This study does not concern redwood but a later investigation by Haasis states that redwood has seasonal variations closely related to the diurnal fluctuations reported in this study. (See Haasis, F. W., 1932, Shrinkage of Monterey Pine and Redwood Trees.)

603 MacDOUGAL, DANIEL T. 1932. Seasonal Action of the Redwood. Carnegie Inst. of Wash., Wash., D.C., [Reprinted from] *Year Book No. 31, 1931-1932.* p. 195.

"The thin filamentous roots elongate through the winter. The formation of new leaves begins in March, and increase in the trunks takes place from April to October. Individual exceptions have been noted."

604 MacDOUGAL, DANIEL T. 1936. Studies in Tree-growth by the Dendrographic Method. Carnegie Inst. of Wash., Wash., D.C. Pub. No. 462. 256 p. Tables.

First observations were begun in April 1921. Detailed notes on redwood trees studied, p. 195-197. (The author uses the board foot unit as an equivalent cubic volume unit.)

605 MacDOUGAL, DANIEL T. 1938. Tree Growth. Chronica Botanica Co., Leiden, Holland. 240 p. Tables. (Reviewed in *J. Forestry.* 37:426. May 1939.)

Chapters 10 and 11 report dendrographic records on redwood growth, p. 97-104. Chapter 10 concerned with trees 1-30 years old, primarily Coast redwood; chapter 11 on growth in older trees, measurements made on Sierra redwood, but with reference to Coast redwood. Tables give fortnightly or other increases for various periods on specific trees. List of literature at end of each chapter.

606 SCHULMAN, EDMUND. 1940. Climatic Chronology in Some Coast Redwoods. *Tree-Ring Bul.* 6:22-23. Jan. 1940.

Notes on the difficulty of using redwood for dating, due to discontinuous rings and lack of circuit continuity. Also, a brief note on the work of the author in Carnegie Institute of Wash., *Year Book No. 32*, p. 208, stating that cross-dating is better in the upper levels of the tree than at the base, and that a check on accuracy is possible by cross-dating between different trees by means of occasional deficient rings.

607 SHREVE, FORREST. 1924. The Growth Record in Trees. In *Growth in Trees and Massive Organs of Plants.* Carnegie Inst. of Wash., Wash., D.C. May 1924. Pub. No. 350. p. 89-116. Tables.

Growth study of a 15-year-old stump sprout 17 meters high and 26 cm. thick at the stump, felled in 1922 near Carmel, Calif. Compared with similar study on Monterey Pine. An attempted correlation with rainfall is not conclusive. Tables and graphs show the results of the study. (*See also* D. MacDougal, Dendrographic Measurements.)

Relation to Sierra Redwood, Taxodium and Metasequoia

608 —

609 CHANEY, RALPH W. 1948. Redwoods Around the Pacific Basin. *Pacific Discovery.* 1:4-14. Sept.-Oct. 1948. Illus., map.

Popular but authentic account of the "Dawn redwood" *(Metasequoia)* discovered in China. Includes a brief description of the distinguishing characteristics which separate *Metasequoia* and *Sequoia;* map shows the world distribution of fossils of both species. List of References. (Note: Similar material in *Redwood Region Logging Conference Bulletin,* Brizard-Matthews Machinery Co., Eureka, Calif., May 28-29, 1948.)

610 FLORIN, RUDOLPH. 1931. Untersuchungen zur Stammesgeschichte der Coniferales und Cordaitales. Svenska Vetenskapsakademien, Stockholm. *Handlingar.* Vol. 10, ser. 3. 588 p. plus 58 plates. [In German.]

Discussion on the difference in embryogeny between the two *Sequoias,* p. 350-357.

611 HU, HSEN-HSU. 1948. How Metasequoia, the "Living" Fossil was Discovered in China. *J. of the New York Botanical Garden.* 49:201-207. Sept. 1948. Illus.

Also in *Trees,* 8:8, 16-17, Sept.-Oct. 1948, with title "Dawn Redwood—Most Fascinating Botanical Discovery of the Century."

The *Journal* article contains photographs of the trees growing in Szechuan, China, in the winter without leaves and also in summer foliage.

612 HU, HSEN-HSU, and CHENG, WAN-CHUN. 1948. On the New Family Metasequoiaceae and on Metasequoia Glyptostroboides. . . . *Fan Memorial Inst. of Biol., Peiping Bul.* 1 (new ser.): 153-161. May 15, 1948. Illus., map.

Contains a systematic description of the specimens found in Szechuan and Hupeh, China, and a brief note on several fossil species which should be referred from the genus *Sequoia* to *Metasequoia: M. macrolepis, M. fastigiata, M. concinna, M. langsdorfii, M. nordenskioldii, M. reichenbachii, M. heerii.*

613 LI, JOHN YOH-HAN. 1948. Anatomical Study of the Wood of "Shui-Sha," Newly Discovered Tree. China. National Forestry Research Bureau. Tech. Bul. No. 5. April 25, 1948. 2 p. Processed.

Brief description of the general characteristics and properties of the wood, and minute anatomy, of *Metasequoia glyptostroboides*, Hu et Cheng.

614 MERRILL, E. D. 1948. A Living Metasequoia in China. *Science.* 107 (ser. 2): 140. Feb. 6, 1948.

Brief article describing the tree and its discovery, with the note that seeds had been collected and distributed to various United States institutions, including some received by the author at the Arnold Arboretum.

615 MERRILL, E. D. 1948. Metasequoia, Another "Living Fossil." *Arnoldia.* 8:1-8. March 5, 1948. Illus., map.

Short paper giving a description of the discovery of the specimens found in China.

616 MURRAY, ANDREW. 1860. Notes Upon Californian Trees: Part 2. From the *Edinburgh New Philosophical J.*, new series, for April 1860. Printed by Neill & Co., Edinburgh. p. 9-31.

Also in *Trans. of the Bot. Soc.*, Edinburgh. 6:330-347. Jan. 1860.

Sierra redwood described and compared with Coast redwood, p. 9-24; Coast redwood further described, p. 24-25.

617 MURRAY, ANDREW. 1866. On the Homologies of the Male and Female Flowers of Conifers. *Annals and Magazine of Natural Hist.* [London]. 18 (105): 212-221. Series 3. Sept. 1866.

Comparison of male and female flowers of Sequoia sempervirens to Wellingtonia.

618 PENHALLOW, DAVID P. 1907. A Manual of the North American Gymnosperms. Ginn & Co., Boston. 374 p. Illus., index.

Contains many references to the genus Sequoia, and to Coast redwood in particular, including the anatomy of resin passages, pits, rays, and the differences in characteristics of the two species. There is a concise summary on p. 223-226 of the anatomy of both Coast and Sierra redwood, and four fossil remains: *S. langsdorfii*, *S. burgessii*, *S. magnifica*, and *S. penhallowii*.

619 RADAIS, MAXIME. 1894. Anatomie Comparée du Fruit des Conifères. *Annales des Sciences Naturelles (Paris). Botanique.* 19 (ser. 7): 165-368. Illus. [In French.]

Discussion and comparison of Coast and Sierra redwood, p. 313-319. A comparison between *Cryptomeria*, *Taxodium* and *Sequoia*, p. 343-349. Drawings show adult cone sections of Coast and Sierra redwood.

620 SILVERMAN, MILTON. 1948. [Metasequoia Examined.] *San Francisco Chronicle*, San Francisco. Vol. CLXVI, No. 70-71, 73-74. March 25-26, 28-29, 1948. v.p. Illus., maps.

Newspaper stories on the trip of the author and Dr. Ralph W. Chaney to China to examine *Metasequoia*, in March 1948.

621 STEBBINS, G. L. 1948. The Chromosomes and Relationships of *Metasequoia* and *Sequoia.* [Reprinted from] *Science.* 108:95-98. July 30, 1948.

The author concludes that there are grounds for a "working hypothesis that *S. sempervirens* originated as an allopolyploid from hybrids between an early Tertiary or Mesozoic species of *Metasequoia* and some probably extinct type of taxodiaceous plant not unlike the three modern genera" *Sequoiadendron*, *Taiwania*, and *Athrotaxis*.

Albinism

622 ANON. 1867. [Albinism in Redwood.] In *Calif. Acad. Natural Sci. Proc.* 3:288.

At the regular meeting of Aug. 6, 1866,

Prof. Whitney exhibited a branch of redwood from near San Rafael which showed albinism.

623 ANON. 1923. Albino Redwood Shoots. *St. Louis, Missouri, Bot. Garden Bul.* 11:90-92. Sept. 1923.

Description of a white redwood shoot grown from a burl consisting largely of bark. Also discussion of shoot formation from ordinary bark and from bark of burls.

624 ANON. 1901. Notes for Students. *Bot. Gazette.* 31:442. June 1901.

Remarks on studies made by Professor G. J. Peirce on Sequoia sempervirens, especially on the albinism of certain suckers.

625 CANNON, W. A. 1908. A Redwood Sport. *The Plant World.* 11:232-234. Oct. 1908.

A white redwood shoot growing from the buttress of an old tree found in the vicinity of Santa Cruz Mountains.

626 WELLS, GEORGE S. 1955. The Muir Woods Albino. *Nature Mag.* 48:267. May 1955. Illus.

Popular description of the albino redwood in Muir Woods, Calif.

THE FOREST

627 ANON. 1866. A Great Curiosity. *Calif. Farmer.* 25:109. April 12, 1866.

An acorn imbedded in the heart of a large redwood.

628 ANON. 1936. Roosevelt Elk Battles Against Extinction. *Calif. Conservationist.* 1:2, 15. March 1936. Illus.

A brief account of the sole remaining herd, in the redwood region.

629 ANON. 1904. Where Does the Heaviest Timber Grow? *Amer. Lumberman.* 1507:54. April 9, 1904.

Editor's answer to an inquiry on yield states that small tracts of redwood have produced yields up to a maximum of 1 million feet per acre.

630 ANON. 1891. Wild Flowers and Nature. *Meehan's Monthly.* 1:163. July 1891.

Redwood trees from cuttings.

631 ALLARD, JOHN B. 1951. Nature Notes from the California State Redwood Parks. Sacramento State College Foundation, Natural Hist. Ser. No. 4. 26 p. Illus. (Copy located in Library of Calif. Dept. Natural Resources, Div. of Parks.)

Clear and simple description of redwood tree and its associates, including other trees, shrubs, flowers, birds, mammals, reptiles.

632 ARMER, LAURA ADAMS. 1947. Lilies in the Redwoods. *Amer. Forests.* 53:156-157. April 1947. Illus.

Popular article. Also contains information on the commercial growing of lilies.

633 BOARDMAN, VIOLA L. 1899. Redwood Blooms. *Overland Monthly.* 33 (ser. 2):427-432. May 1899. Illus.

During a stay of 5 years in the heart of a Mendocino forest the author made the acquaintance of over a hundred flowers. The more striking of these are listed, briefly described, and illustrated.

634 BOLANDER, HENRY N. 1865. Remarks on California Trees. *Calif. Acad. of Sci. Proc.* 3:231-233. 1865.

Location and climate in which redwood flourishes, its tenacity of life, its value as a condenser of fog into rain, and the dire consequences of forest destruction.

635 CLARKE, WARREN T. 1920. Forest Giants — Gregarious Habit of the Sequoia. *Overland Monthly.* 76 (ser. 2):57-60. Sept. 1920.

The author points out the effect of "gregariousness" is to make it more "susceptible" to logging. Contains an account of a storm in which three trees crashed to the ground.

636 CLEMENTS, FREDERIC E. 1920. Plant Indicators; the Relation of Plant Communities to Process and Practice. Carnegie Inst. of Wash., Pub. 290. [Press of Gibson Bros., Inc.] Wash., D.C. 388 p. Illus., index.

The position of redwood in the Coast Forest Climax, thuja-tsuga formation; the Cedar-Hemlock Forest, Thuja-Tsuga association, p. 214-219. Redwood is the largest and southernmost of the dominants of the Coast Forest. The other major dominants are listed. The species associated with redwood are named, and the tolerance of these species related to each other and to soil, water, and temperature factors.

637 COOPER, WILLIAM S. 1922. The Broad-sclerophyll Vegetation of California. Carnegie Inst. of Wash. [Wash., D.C.]. Oct. 1922. Pub. 319. 124 p. Illus., biblio.

Subtitled: An Ecological study of the chaparral and its related communities. The relation of the broad-sclerophyll forest formation and the redwood forest, and the species commonly occurring as an understory, p. 19-23.

638 FAIRBANKS, HAROLD W. 1925. California. 6th ed. Harr Wagner Pub. Co., San Francisco.

The Big Tree of the Sierra and the redwoods of the Coast Range, p. 42, 98, 102, 124-125.

639 FAIRBANKS, HAROLD W. 1912. The Geography of California. Whitaker & Ray Wiggin Co., San Francisco.

Sequoia sempervirens: most important lumber trees of the Coast Ranges, p. 32-33.

640 FISCHER, WILLIAM F. 1949. Douglas-fir of the Redwood Region. *Redwood Region Logging Conf. Bul.*, Brizard-Matthews Machinery Co., Eureka, Calif. p. 10.

Popular article on resources, primarily.

641 FRITZ, EMANUEL. 1926. How a Tree Robbed a Bird. *Nature Mag.* 8:349. Dec. 1926. Illus.

Describes the hole bored in a redwood tree by a woodpecker, the hiding of acorns and the subsequent sealing of the hole by the growth of the tree.

642 FRITZ, EMANUEL. 1949. What's Happening to Our Western Forests. [Univ. of Calif. School of Forestry.] 13 p. Processed.

Talk before the Western Society of Naturalists, Palo Alto, Calif., Dec. 30, 1949. General as to redwood; suggests possible damage to Sierra redwood stands from competition with white fir and other trees invited by exclusion of fire.

643 GANNETT, HENRY. 1899. The Redwood Forest of the Pacific Coast. *Natl. Geog. Mag.* 10:145-159. May 1899. Illus.

Also in *The Forester* [*Amer. Forests*], 5:148-150. July 1899 (condensation). General description of the tree and the forest, including stand and cut, logging methods and ownership. Author was Geographer of the U.S. Geological Survey. He notes paucity of seedling reproduction and attributes it to "the present environment is not favorable . . .", p. 150.

644 GORDON-CUMMINGS, CONSTANCE FREDERIKA. 1882. Granite Crags. W. Blackwood & Sons, Edinburgh.

Redwood forests, p. 42-47.

645 GUTHRIE, JOHN D. 1925. The Redwoods of Oregon. *Four L Bul.* [*Four L Lumber News*]. p. 16, 18. April 1925. Illus.

General information about the extremes of range, and the definite location of the six Oregon groves. In Curry County, Oregon, there are some 2500 acres containing 50 million feet of timber which is government owned.

646 HALL, WILLIAM HAYNES. 1935. A Monograph of the Great Sequoia Forest that Stood on and over the Blue Ridge of the Contra Costa Range Five Miles East of San Antonio, later Brooklyn, and later East Oakland. Manuscript.

Early lumbering activities, pioneers of the industry, and descriptions of old landmarks and early inhabitants of East Oakland.

647 HASTINGS, CRISTEL. 1925. Trees of the Redwood Highway. *Overland Monthly.* 83 (ser. 2) : 370-371. Oct. 1925.

Primarily a descriptive listing of the trees and shrubs associated with redwood along the Redwood Highway.

648 HECKMAN, HAZEL. 1951. The Happy Brush Pickers of the High Cascades. *Sat. Evening Post.* 224: 36-37, 102-103, 105-106. Oct. 6, 1951. Illus.

Descriptive of the "Greens" business in western Oregon and Washington, but applies also to the redwood region. Greens include ferns, salal, and huckleberry. Colored photographs illustrate the material.

649 JEPSON, WILLIS LINN. 1896. Distribution of the Coast Redwoods. *Erythea.* 4: 125.

Southernmost and northernmost redwood trees.

650 JEPSON, WILLIS LINN. 1909+. A Flora of California. Univ. of Calif., Berkeley. 4 vols., incomplete.

Begun in the 1890's, the planned 4 vols. are incomplete. Covers the flora of the redwood forest. Contains bibliographies by families, references by species, citations of specimens and synonomy. The author's Manual of the Flowering Plants of California is a condensation of the planned Flora.

Vol. I. Gymnosperms, Monocotyledons, Dicotyledons from Salicaceae to Fumoriaceae. Released in parts. Botanical text complete.

Vol. II. Capparidaceae to Cornaceae. Published.

Vol. III. To Compositae. Released in parts. On the press.

Vol. IV. Composite. Index.

651 JEPSON, WILLIS LINN. 1915. Forests of the Pacific Coast. In *Nature and Science on the Pacific Coast.* P. Elder & Co., San Francisco. p. 159-167.

Includes Redwood Belt, tree, and climate, p. 163-164.

652 JEPSON, WILLIS LINN. 1941. The Joy of Days Afield in the Redwood Belt with Its Native Flowers and Shrubs. [Reprinted from] 1941 Calif. Spring Garden Show Catalogue. [2 p.]

Brief account of the associated species and flowers.

653 JEPSON, WILLIS LINN. 1925. A Manual of the Flowering Plants of California. Univ. of Calif., Berkeley, 1951. 1242 p. 1023 illus.

Standard guide for descriptions and identification of plants of California, including those of the redwood forest. Includes paragraphs on life zones, and concept of genera and species, and a glossary of botanical terms. A 16-page bulletin of extracts was published separately in 1950 by Save-the-Redwoods League, under title, Trees, Shrubs and Flowers of the Redwood Region.

654 JEPSON, WILLIS LINN. 1935. Trees, Shrubs and Flowers of the Redwood Region. Save-the-Redwoods League, Berkeley. 16 p. Illus., index.

Brief descriptions of the principal species. Illustrations are largely linecuts from his "Manual of the Flowering Plants of California."

655 KANE, GRACE. 1932. Growth of Vegetation Beneath the Redwoods. *Flower Grower.* 19: 294-295. July 1932. Illus.

Advocates looking at "the beautiful

things that are found in the shade of the redwoods" as well as looking at the trees. Popular.

656 KEELER, CHARLES. 1898. Summer Birds of the Redwoods. *The Land of Sunshine.* 9:293. Nov. 1898.

Interesting habits of woodpeckers storing acorns in the trunks of redwood trees.

657 KELLETER, PAUL D. 1904. A Silvicultural Description of Sonoma and Mendocino Counties, Calif.

Thesis (M.F.) —Yale University, School of Forestry, 1904.

658 KELLOGG, A. 1860. California Flowers. *Hutchings' Calif. Mag.* 4:441. April 1860.

The author writes of Oregon Sorrel "growing in shady Red-woods."

659 KELLOGG, GEO. A. 1917. City of Eureka. Humboldt Chamber of Commerce, Eureka, Calif.

Sequoia Park, p. 9-10.

660 KOCH, L. F. 1951. Fissideus Pauperculus Howe and Orthodontium Gracile Bruch & Schimper; Mosses Associated with the Coast Redwood Forest. *Science.* 114:571-572. Nov. 30, 1951.

661 MACKEY, CHARLOTTE. 1945. Forest Shrine; The Story of Mt. Hermon. *Amer. Forests.* 51:482-485, 517. Oct. 1945. Illus.

Description of the Mt. Hermon redwoods in the Santa Cruz Mountains.

662 MASON, HERBERT L. 1947. Evolution of Certain Floristic Associations in Western North America. Ecological Monographs. 17:201-210. April 1947.

Article on the "interplay between environmental condition and genetic and physiological phenomena that induce migration, bring about extinction, and select those genetic races with the species population that are preadapted to the new conditions." There are sections on the redwood forest flora of the present and through time, and on the relation of modern forest floras to the tertiary redwood, p. 206-210.

663 MASON, HERBERT L. 1936. The Principles of Geographic Distribution as Applied to Floral Analysis. *Madroño.* 3:181-190. Jan. 1936.

Movements of flora have taken place in the past and are continuing to take place, and extremes of climatic factors control distribution. Redwood migrations are mentioned throughout the article. "The most convincing evidence of past migration of floras is the history of the flora that has been associated with the record of *Sequoia sempervirens*. In tracing the history of redwood in North America, it is necessary to go more deeply into the geological sequence as we go northward. We find it in the Eocene of Alaska and Canada, the Oligocene of Oregon, the Miocene of California and Nevada, and the Pliocene of California, where it became restricted to its present coastal distribution by the close of the Pleistocene. The conclusion is evident that as time progressed, the redwood and its associates moved farther and farther southward."

664 MILLER, ROBERT C. 1950. Oldest Bird Nest? *Pacific Discovery.* p. 29-30. July-Aug. 1950. Illus.

Describes a hole made by a woodpecker, and filled later with acorns, about the year 862 A.D., and enclosed by the growth of the tree.

665 MUIR, JOHN. 1894. The Mountains of California. Century Co., New York, 1907. 381 p. Index.

Also the *Manuscript Edition*, Houghton Mifflin Co., Boston & New York, 1915, 309 p.

In the chapter on the Bee-Pastures, Muir describes the Redwood Belt, listing the plants associated with the forest, p. 91-94.

666 PERSON, HUBERT L. 1931? Bibliography on Wildlife of the Redwood Region. [U.S. Forest Serv.

Calif. Forest and Range Expt. Sta., Berkeley.] 10 p. Processed.

Entries dated up to 1928.

667 PURDY, CARL. 1896. The Increase of Redwood Forests. *Garden and Forest.* 9:238. June 10, 1896.

Letter to the editor noting the density of undergrowth in the redwood forests, which is inimical to the grazing interests.

668 PURDY, CARL. 1891. Redwood Timber. *Garden and Forest.* 4:237-238; 249-250. May 20/May 27, 1891.

Two articles about the yield per acre of average, good, and exceptional lands in Mendocino and Humboldt counties; the cost of stumpage; and the acquisition and holding of redwood lands.

669 REINEKE, L. H. 1933. Perfecting a Stand-Density Index for Even-aged Forests. *J. Agr. Research.* 46: 627-638. April 1, 1933. Tables.

Data for second-growth redwood as collected by D. Bruce are fitted to a reference curve as a small part of a study to plot the number of trees per acre against the average diameter (from basal area) to obtain a stand-density index. List of literature cited.

670 ROWNTREE, LESTER. 1946. At the Feet of Giants. *Nature Mag.* p. 188-190, 218. April 1946. Illus.

Descriptive of the flowering plants in the redwood forests.

671 SHINN, CHARLES H. 1889. Among Oaks, Madrones and Redwoods. *Garden and Forest.* 2:398. August 21, 1889.

From Cazadero on Austin Creek to Guerneville on Russian River.

672 SHINN, CHARLES H. 1892. In the Redwood Forest. *Garden and Forest.* 5:502-503. Oct. 19, 1892.

A note to the editor describing the flora of the region (primarily rhododendrons) near Russian River. Describes sprouting from stumps after a cut 20-30 years previously, and how stumps of 12 to 15 feet in height were left. One stump, later taken out by Col. J. B. Armstrong, yielded 15,000 feet of lumber at $40 M "because it happened to be of especial beauty for cabinet-work."

673 WEAVER, JOHN E., and FREDERIC E. CLEMENTS. 1929. Plant Ecology. McGraw, New York.

The Coast forest, p. 443-444.

674 YOUNG, JOHN V. 1941. The Crazy Forest. *Amer. Forests.* 47: 511. Nov. 1941. Illus.

Description of the "Crazy Forest" on Soquel Creek, Santa Cruz County, reported to have been caused by the earthquake of 1906.

675 ZIERER, CONRAD M., ed. 1956. California and the Southwest. Wiley, New York, 1956. 360 p.

Ch. 18, Forests, Forest Industries and Forest Problems, is by Emanuel Fritz. Deals in part with redwood forests and industries.

THE WOOD

General

676 ANON. 1921. Characteristics and Uses of Redwood. *Lumber and Veneer Consumer.* 2:17-19. Nov. 30, 1921. Illus.

Including general characteristics of the wood and its properties, and production figures from 1909 to 1918.

677 ANON. 1955. Finishing of Western Red Cedar and Redwood. *Consumers Research Bul.* 35:21-23. Feb. 1955.

678 ANON. 1911. Humboldt County, California. Eureka Printing Co., Eureka, Calif.

Qualities of redwood, its special adaption for patterns, mouldings, tanks, vats, etc., p. 26-27.

679 BETTS, H. S. 1945. American Woods: Redwood. U.S. Forest

Serv., Wash., D.C. 6 p. July 1945. Map, tables.

One of a series on American woods, giving a description of the wood and products, with tables for consumption (1912-1940).

680 BOULGER, G. S. 1908. Wood; a Manual of the Natural History and Industrial Applications of the Timbers of Commerce. 2d ed., rev. Edward Arnold, London. 348 p. Illus., index.

Brief description of sources, characteristics, and uses (in England), p. 261-262. Description of wood, p. 320. Photomicrograph.

681 GOSS, W. F. M. 1898. Bench Work in Wood. Ginn & Co., Boston. 161 p. Illus.

A textbook for manual training schools containing brief paragraphs on important woods, giving characteristics and uses in accord with the knowledge of the day, and including redwood.

682 HOLMAN, RICHARD M., and WILFRED W. ROBBINS. 1934. A Textbook of General Botany, 3d ed. John Wiley & Sons, Inc., New York. 626 p. Illus.

Includes illustrations of the wood and photomicrographs.

683 NEWELL, ADNAH C. 1927. Wood and Lumber. The Manual Arts Press, Peoria, Ill. 211 p. Illus., tables.

Contains brief references to the color, weight, and durability.

684 NOYES, WILLIAM. 1912. Wood and Forest. The Manual Arts Press, Peoria, Ill. 309 p. Illus., index.

Brief and general information on characteristics, appearance of wood, physical qualities, and uses, p. 100-101.

685 PAUL, BENSON H. 1951. Some Comparative Characteristics of Second-growth and Old-growth Redwood. Forest Prod. Research Soc. *Proc.* 5:215-220. Illus., tables.

Comparisons were made between old-growth and second-growth redwood with respect to specific gravity, strength, shrinkage and other significant properties. Silvicultural practices are recommended to produce high-quality timber on the shorter rotations.

686 PRATT, WILLARD E. 1952. Exterior Finish Study; Report on Performance of Finish Treatment. Calif. Redwood Assoc., Redwood Research Rpts. Research Project 5.10101 H. [5 p.]

Evaluation of the performance of an additional group of 18 exterior finishing systems.

687 RECORD, SAMUEL J., and ROBERT W. HESS. 1943. Timbers of the New World. Yale Univ. Press, New Haven. 640 p. Index.

Brief description of the tree and the wood, under *Taxodiaceae*, p. 28.

688 ROTH, FILIBERT. 1902. First Book of Forestry. Ginn & Co., Boston and London. 291 p.

Two very brief and general references to the wood, p. 156, 262.

689 SNOW, CHARLES H. 1903. The Principal Species of Wood: Their Characteristics and Properties. John Wiley & Sons, New York. 203 p. Illus., index.

Redwood, p. 180, 182.

690 SNOW, CHARLES H. 1917. Wood and Other Organic Structural Materials. McGraw-Hill Book Co., New York. 478 p. Illus.

P. 98 to 101 concern the Coast redwood; general statements include the features of the tree, properties of the wood, and general remarks. References are made to the common works concerning redwood.

Anatomy. Cellular Make-up

691 ANON. 1884. Proceedings of the

Torrey Club. *Torrey Bot. Club Bul.* 11:84. July 1884.

Contains photomicrographs of sections of some American timber trees, among them Sequoia sempervirens.

692 BAILEY, IRVING W. 1917. Pits and Tertiary Spiral Thickenings. *J. of Forestry.* 15:181, 187. Feb. 1917.

Used in distinguishing the wood of Taxodium from that of Sequoia. Explanatory plates showing role of the microscope, p. 187.

693 BAILEY, IRVING W. 1916. The Structure of the Bordered Pits of Conifers and Its Bearing upon the Tension Hypothesis of the Ascent of Sap in Plants. *Bot. Gazette.* 62: 133-142. July 1916. Illus.

Perforations are shown to exist in the bordered pits of the sapwood.

694 BAILEY, I. W., and ANNA F. FAULL. 1934. The Cambium and Its Derivative Tissues: IX, Structural Variability in the Redwood. [Reprinted from] *J. of the Arnold Arboretum.* 15:233-254. Illus.

Subtitled: And Its significance in the identification of fossil woods. Gives proof that the great variability noticeable between supposed separate fossil species may exist in a single modern individual. A number of photomicrographs of cross sections of blocks from pith to bark, and of pitting. List of literature cited.

695 BAILEY, I. W., and W. W. TUPPER. 1918. Size Variation in Tracheary Cells. *Amer. Acad. of Arts and Sci. (Boston) Proc.* 54: 149-204. Sept. 1918. Tables.

Table gives "the lengths of the tracheary elements . . . of the secondary xylem of stems" for older wood and the first annual ring.

696 BANNAN, M. W. 1934. Origin and Cellular Character of Xylem Rays in Gymnosperms. *Bot. Gazette.* 96:260-281. Dec. 1934. Illus.

The article covers most genera in the gymnosperms, particularly *Pinus.* However, on p. 272-274 Coast redwood is used as an example to illustrate three genera *(Sequoia, Cunninghamia, Taiwania)* which the author has classed together as the third group he subdivided the *Taxodineae* into.

697 BELYEA, H. C. 1920. Ray Tracheid Structure in Second Growth Sequoia Washingtoniana. *Bot. Gazette.* 68:467-473. Dec. 1919. Illus.

Single tracheary cell and interspersed ray tracheid in big tree.

698 BROWN, H. P., and A. J. PANSHIN. 1940. Commercial Timbers of the United States. McGraw-Hill Book Co., Inc., New York. 554 p. Illus., tables, index.

Published formerly under the title "Identification of the Commercial Timbers of the United States," 1934. Main discussion of redwood, p. 405-407, including general characteristics and properties, minute anatomy, uses. Photomicrographs. List of selected references at end of chapter.

699 COULTER, JOHN M., and CHARLES J. CHAMBERLAIN. 1917. Morphology of Gymnosperms. Rev. ed. Univ. of Chicago Press, Chicago, Ill. 466 p. Illus., index.

A discussion of resin ducts, normally absent from Coast redwood, but more probably an ancestral feature of Sequoia. The morphology treats of the spore-producing members, the gametophytes, and the embryo. There is a "Summary of Literature" cited which contains many references to Coast redwood.

700 FORSAITH, C. C. 1926. The Technology of New York State Timbers. Syracuse Univ. New York State College of Forestry. Tech.

Pub. 18. 374 p. Illus., index.

Anatomical features of "red wood" referred to throughout the text; Coast redwood specifically discussed, p. 310-312: gross features; minute features (3 drawings of transverse, tangential, and radial sections of wood); and general uses.

701 FRITZ, EMANUEL. 1950. How Redwood Looks Under the Microscope. *Redwood Region Logging Conf. Bul.*, Brizard-Matthews Machinery Co., Eureka, Calif. p. 15-16. Illus.

Popular and brief explanation of the anatomy of wood. Illustration of a small cube of wood as it appears under a microscope, with accompanying description.

702 GORDON, MARJORIE. 1912. Ray Tracheids in Sequoia Sempervirens. *New Phytologist* [London]. 11:1-7. Illus.

"The results of the present work have been to demonstrate the presence of ray tracheids, both marginal and interspersed, in old stem wood of *S. sempervirens.*" Prior to this paper, ray tracheids were said to be absent in this species. List of literature cited.

703 HARLOW, WILLIAM M. 1928. Contributions to the Chemistry of the Plant Cell Wall; Parts 2, 4. Syracuse Univ. New York State College of Forestry. Tech. Pub. 24, 17 p.; Tech. Pub. 26, p. 17-23. Illus.

Part 2, Pub. 24 titled: Lignification in the secondary and tertiary layers of the cell walls of wood. Redwood was one of 7 softwoods used; chemical tests showed it possessed distinguishable tertiary layers. Photomicrograph.

Part 4, Pub. 26 titled: Some microchemical reactions of woody tissues previously treated with hydrofluoric acid. Redwood one of 2 softwoods used: "less swelling developed during the sulfuric acid hydrolysis than in the normal wood, but the discrepancy between normal and acid treated (HF) wood was less pronounced." Bibliographies do not pertain to Coast redwood.

704 ISENBERG, IRVING H. 1944. Redwood. In *Properties of Pulpwoods, supp. vol.* The Inst. of Paper Chem., Appleton, Wisc. Nov. 1944. p. 196-198. Tables. Processed.

Data on microscopic structure; physical, mechanical and chemical properties; pulping.

705 JEFFREY, EDWARD C. 1917? The Anatomy of Woody Plants. Univ. of Chicago Press, Chicago, Ill. 478 p. Illus., index.

Main discussion on p. 339-341. Concludes "the occurrence of ligneous resin canals in the various primitive regions [of wood, leaf, and cone scale] is good evidence of the original presence of such structures in the woody tissues of *Sequoia.*" Brief discussion of tracheids, p. 25, 72-73.

706 JONES, W. S. 1914. Ray Tracheids in Sequoia Sempervirens and Their Pathological Character. *Q. J. Forestry* [London]. 8:81-94. April 1914. Illus.

The author describes the various types of ray tracheids found, and from the evidence concludes them to be pathological in character. Photomicrographs and drawings.

707 JONES, W. S. 1912. The Structure of the Timbers of Some Common Genera of Coniferous Trees. *Q. J. Forestry* [London]. 6:112-134. April 1912. Illus.

The author gives reasons for opposing Penhallow and supporting Jeffrey in the view that resin passages in Sequoia are traumatic, p. 124-129.

708 JONES, W. S. 1924. Timbers, Their Structure and Identification. Clarendon Press, Oxford [England]. 148 p. Illus., index.

Including anatomical features. Key to microscopic and macroscopic characteristics of coniferous timbers. Good index.

709 KOEHLER, ARTHUR. 1917. Guidebook for the Identification of Woods Used for Ties and Timbers. U.S. Forest Serv., Wash., D.C. 79 p. Illus.

". . . intended primarily for inspectors." Gives key for identification with and without a hand lens. Description of characteristics and physical properties on p. 70.

710 KOEHLER, ARTHUR. 1933. A New Hypothesis as to the Cause of Shakes and Rift Cracks in Green Timber. [Reprinted from] *J. Forestry.* 31:551-556. May 1933. Illus.

Redwood is mentioned as an illustration. The author attacks the popular belief that shakes and rift cracks are shear failures caused by the swaying of the tree. He advances the hypothesis "that shakes and rift cracks in green timber are due to transverse compression and tension stresses resulting from growth [and the probable causes may be] 1. greater circumferential than radial growth, 2. reduction in the turgidity of the older tissues, and 3. 'chemical' shrinkage of the older wood."

711 KRÄUSEL, R. 1921. The Structure of Traumatic Wood in Fossil and Recent Sequoias. *Senckenbergiana* [Frankfurt]. 3:135-142. Dec. 1921. Biblio. [In German.]

The findings of various authors is collected and noted.

712 LEWIS, HARRY F. 1939. A Fundamental Botanical Study of Redwood. Inst. of Paper Chem., Appleton, Wisc. 40 p. Aug. 12, 1939. Processed.

This is the final report on Project 488-T2 to the Pacific Lumber Co. (Note: See also Institute of Paper Chemistry, 1946, Redwood.)

713 LODEWICK, J. ELTON, and ELLWOOD S. HARRAR. 1937. What Wood Is That? *Timberman.* 38:33-34, 36, 38, 40; 18, 20, 22, 24. June/July 1937. Illus.

A series of photomicrographs of western woods, with description of diagnostic features; Coast redwood, p. 40 (June).

714 MacDOUGAL, DANIEL T., and GILBERT M. SMITH. 1927. Long-lived Cells of the Redwood. *Science.* 66:456-457. Nov. 11, 1927.

There is great variation in the length of life of the ray parenchyma. In some cases these live for many decades after transformation to heartwood. No reason for this was found. In all cases the wood parenchyma cells are relatively short lived.

Also in Carnegie Inst. of Wash., *Year Book No. 27,* 1928, p. 171-172.

715 MITCHELL, JOHN N. 1936. The Detailed Structure of Stem Wood of the Two Sequoias. [Reprinted from] *J. Forestry.* 34:988-993. Nov. 1936.

The woods of the two Sequoias are very similar, and there is no anatomical feature universally present in one species and absent in the other. Average specimens of each species are, however, easily distinguishable and the chances of identifying an unknown specimen are favorable. (Note: This article is an abstract of a thesis for the master's degree at the Univ. of Calif., 1935, entitled "The Comparative Histology of the Secondary Xylem of *Sequoia gigantea* and *Sequoia sempervirens.*"

716 PENHALLOW, D. P. 1904. The Anatomy of the North American Coniferales Together With Certain Exotic Species from Japan and Australasia. *Amer. Naturalist.* 38(448):243-273. Apr. 1904.

This article deals with the classification of the North American Coniferales, based upon the anatomy of the vascular cylinder of the mature stem. The fundamental idea was that such a classification would prove a great value in the identification of material used for structural purposes.

717 PENHALLOW, D. P. 1904. The Anatomy of the North American Coniferales Together With Certain Exotic Species from Japan and Australasia. *Amer. Naturalist.* 38 (449) : 331-359, 523-554. May 1904.

The medullary rays, p. 331-359; Resinous tracheids and resin cells, p. 523-554.

718 PILLOW, M. Y., and R. F. LUXFORD. 1937. Structure, Occurrence and Properties of Compression Wood. U.S. Dept. Agr., Wash., D.C. Tech. Bul. 546. 32 p. Illus., tables.

Contains several references to compression wood in redwood.

719 RECORD, SAMUEL J. 1919. Identification of the Economic Woods of the United States. 2d ed. John Wiley & Sons, Inc., New York. 155 p. Illus.

Subtitled: Including a discussion of the structural and physical properties of wood. Coast redwood mentioned, p. 17, 23, 52, 82.

720 RECORD, SAMUEL J. 1934. Identification of the Timbers of Temperate North America. John Wiley & Sons, Inc., New York. 196 p. Illus., index.

Contains many references to the identification, anatomy, and cell structure of redwood. Photomicrographs, and pictures of discontinuous rings.

721 RECORD, SAMUEL J. 1918. Intercellular Canals in Dicotyledonous Woods. *J. Forestry.* 16:429-441. April 1918.

Mentions the occurrence of traumatic resin ducts in *Sequoia;* these are vertical. States that traumatic radial canals have been found in certain extinct species of *Sequoia*, but always in association with vertical ducts. List of literature cited.

722 STEINBOCK, HEINRICH. 1926. The Anatomy of the Pith-cells of Some Coniferous Woods. *Österreichische Bot. Zeitschrift.* 75:65-84. April-June 1926. [In German.]

Studies made chiefly on pith from branch wood. *Sequoia sempervirens* compared with species of *Taxodium. T. distichum* inner pith cells have thick walls and are usually divided. *T. mexicanum* and *S. sempervirens* have thin walls and no divisions but the cells of *Sequoia* in longitudinal view are 2-6 times longer than wide whereas those of *T. mexicanum* are not. In the secondary wood *S. sempervirens* has no knotty thickenings in the wood parenchyma cross-wall. With these facts it becomes possible to separate the 3 species from each other. This is useful in deciding the species in tertiary deposits of brown coal.

723 STERLING, CLARENCE. 1944. Growth and Vascular Development in the Shoot Apex of *Sequoia Sempervirens* (Lamb.) Endl. [Berkeley, Calif. 101 p.] Illus. Processed.

Thesis (Ph.D.) — Univ. of Calif., Feb. 1944.
Same title published in two parts. *Amer. J. Bot.* 32:118-126, 380-386, March/July 1945; the subtitles are: I. Structure and Growth of the Shoot Apex, and II. Vascular Development in Relation to Phyllotaxis. Drawings and photomicrographs.

724 STONE, HERBERT. 1904. The Timbers of Commerce and Their Identification. William Rider & Son, Ltd., London. 311 p. Index, biblio.

Discussed p. 261-262. Called Giant Redwood, S. sempervirens.

Physical and Mechanical Properties

725 ANON. 1880. Durability of Redwood. *Humboldt Times Daily,* Eureka, Calif. 13 (130) : 1. June 1, 1880.

Lasting qualities increase as you get near the butt or base of the tree. Timber from top of the tree is very different and weighs not more than half as much. An exhaustive discussion regarding merits of top and butt timber.

726 ANON. 1928. Old Redwood Bridge. *Timberman.* 29:97. April 1928. Illus.

Timbers from a bridge were found sound when removed after having been used 71 years.

727 ANON. 1903. The Redwood. *Forestry and Irrigation* [*Amer. Forests*]. 9:300-305. June 1903. Illus.

A popular article on the general characteristics of the tree and the region, and citing some of the myths as to the properties of the wood.

728 ANON. 1928. Redwood and Resistance to Rotting. *Textile Colorist.* 50:699. Oct. 1928.

729 ANON. 1903. The Redwood, California's Most Valuable Timber Tree. *Forestry and Irrigation* [*Amer. Forests*]. 9:300-305. June 1903. Illus.

Subtitled: Whose many unique qualities give it a wide range of usefulness. Popular.

730 ANON. 1943. Steering with Redwood Wheels. *Modern Plastics.* 20: 77-81+. Jan. 1943.

731 ALVAREZ, ARTHUR C. 1913. The Strength of Long Seasoned Douglas Fir and Redwood. Univ. of Calif. Press, Berkeley. *Univ. of Calif. Pubs. in Engineering.* 1 (2): 11-20. Tables.

Tests were made for longitudinal compression on 13 samples of redwood which had seasoned 37 years in a frame building. The author concludes this long seasoning caused the timber to be 25% stronger than similar timber air-seasoned two years.

732 ASSOC. FACTORY MUTUAL FIRE INSURANCE CO. 1930. Decay of Wood in Industrial Buildings. Inspection Dept., Assoc. Factory Mutual Fire Ins. Co., Boston, Mass. 79 p. Illus.

Includes statements on the durability of heartwood of redwood, and the availability of redwood in structural sizes and grades which permit comparatively high unit stresses.

733 BAECHLER, R. H., and C. A. RICHARDS. 1951. Deterioration of Wood in Cooling Towers. *Amer. Soc. Mechanical Engineers Transactions.* 73:1055-1059. Nov. 1951. Biblio.

734 BLAKE, WILLIAM P. 1856. Note Upon a Peculiarity of the "Redwood" (Genus Sequoia). *Amer. Assoc. for the Advancement of Sci. Proc.* 9:230. Aug. 1856.

The author reports that a dilute solution of alkali will cause redwood to become black, "like ebony," while a weaker solution will render it like dark mahogany or rosewood.

735 BROOKE, M. 1951. Delignification of Redwood Cooling Tower. *Petroleum Engineer.* 23:C38-39. April 1951.

736 BROWNE, F. L. 1935. Effect of Extractive Substances in Certain Woods on the Durability of Paint Coatings. U.S. Forest Serv. Forest Prod. Lab., Madison, Wisc., Oct. 1935. 7 p. Table. (Mimeograph R1073.)

When the extractive substances of redwood, southern cypress, and ponderosa pine are transferred to the surfaces of boards of eastern hemlock, a wood lacking in characteristic extractive substances of its own, the hemlock acquires some of the painting characteristics of the wood from which the extract is taken.

737 BROWNING, B. L., and L. O. BUBLITZ. 1953. Wood Deterioration in Cooling Towers. *Industrial*

& Engineering Chem. 45:1516-1520. July 1953.

738 CALIF. REDWOOD ASSOC. 1917. How to Finish California Redwood. Calif. Redwood Assoc., San Francisco. 16 p.

739 CALIF. REDWOOD ASSOC. 1923. Physical and Mechanical Properties of California Redwood in Comparison with Other Woods.... Compiled by Calif. Redwood Assoc., San Francisco. 11 p. Tables.

"A digest of figures from the United States government report entitled 'Physical, Mechanical and Chemical Properties of Redwood.' "

740 CLINE, McGARVEY. 1912. Strength Values for Structural Timbers. U.S. Forest Serv., Wash., D.C. Circ. 189. 8 p. Tables.

Redwood was one of the species tested for bending and compression and shear on both green and air-seasoned material.

741 CLINE, McGARVEY, and A. L. HEIM. 1912. Tests of Structural Timbers. U.S. Forest Serv., Wash., D.C. Bul. 108. 123 p. Illus., tables, maps.

"This bulletin aims to correlate all the tests which have been made by the Forest Service on structural timbers, exclusive of round timbers and other special forms." A comprehensive summary of the results of the tests, complete with tabulated data, for stringers and heavy joists, light building joists and small clear beams, tested for bending, compression parallel and perpendicular to the grain, and shearing for both green and air-seasoned timber.

742 COMEAUX, R. V. 1953. Deterioration of Redwood Cooling Towers. *Amer. Petroleum Institute Proc.* 33(3):308-319. 1953. Excerpts *Oil & Gas Journal.* 52:343+. Sept. 21, 1953. Abstract, *Power.* 97:246+. Oct. 1953. Illus., biblio.

743 DIXON, C. n.d. Comparison of the Strength and Physical Properties of Redwood (Sequoia Sempervirens) Grown in America and New Zealand. New Zealand Forest Serv. Br. of Forest Products [Wellington]. 4 p. Table. Processed.

Methods used and results obtained in several series of tests made in New Zealand and America.

744 FRENCH, G. E., and E. C. PECK. 1927. Preliminary Report on the Moisture Content of Lumber as Shipped from Mills in California During the Winter. U.S. Forest Serv., Forest Prod. Lab., Madison, Wisc. Aug. 15, 1927. 6 p.+ 18 tables. Processed.

Including redwood which, grade for grade, ran a moisture content slightly higher than those species from the interior of California.

745 FRITZ, EMANUEL. 1931. The End Shrinkage of California Redwood. *Amer. Lumberman.* 2907:37. Jan. 31, 1931. Illus.

With particular reference to compression wood.

746 FRITZ, EMANUEL. 1950. Mechanical Properties of Second-growth Redwood and Comparison with Virgin Timber. Amer. Soc. for Testing Materials. Bul. No. 169. p. 30-32. Oct. 1950. Tables, biblio.

Condensed in *Calif. Agr.* 4:5, 13. Dec. 1950.

Gives the results of mechanical strength tests.

747 GARRATT, GEORGE A. 1931. The Mechanical Properties of Wood. John Wiley & Sons, New York. 276 p. Tables, index.

This textbook is patterned after the work of the same title by S. J. Record with similar material on bending, shearing, and compression, and including data on wood under dry and wet conditions. List of references at end of each section.

748 GUSTAFSON, CARL A. 1929. A Study of the Discoloration of Painted Surfaces on Sugar Pine and Redwood. Berkeley, Calif. 43 p. Tables. Processed.

Thesis (M.S.) — Univ. of Calif., May 1929.

749 HAWLEY, L. F., L. C. FLECK, and C. A. RICHARDS. 1924. The Relation Between Durability and Chemical Composition in Wood. U.S. Forest Serv. Forest Prod. Lab., Madison, Wisc., July 1924. 5 p. Tables. (Mimeograph 531.)

Also in *Industrial and Engineering Chem.* 16:699-700. 1924.

Extracts were made from sap and heartwood with cold and hot water and concentrated so that 1 cc. contained the extractive from 1 g. of wood. 100, 50, and 10% solutions were inoculated with Fomes Annosus; tables give retardation in per cent for radial growth of the fungus at the end of 7 days.

750 HEIM, A. L. 1912. Mechanical Properties of Redwood. U.S. Forest Serv., Wash., D.C. Circ. 193. 32 p. Illus., tables. (Forest Prod. Lab. Series.)

"This circular presents the results of a series of tests made to determine the mechanical properties of redwood." Materials used were joists and stringers containing defects, and small clear beams. Methods of tests given (for more complete description of methods, see McGarvey Cline and A. L. Heim, Tests of Structural Timbers, Bul. 108). Relation of mechanical to physical properties is outlined. A proposed set of grading rules is compared with Redwood Lumber Manufacturers' Rules. Tables show results of tests.

751 HOUGH, ROMEYN B. 1895. The American Woods. . . . Romeyn B. Hough, Lowville, New York.

Sequoia sempervirens, p. 46-48.

752 HUMPHREY, C. J. 1916. Laboratory Tests on the Durability of American Wood. *Mycologia.* 8:80-92. March 1916.

Flask tests on conifers, including Sierra redwood but not Coast redwood.

753 KOEHLER, ARTHUR, and R. F. LUXFORD. 1931. The Longitudinal Shrinkage of Redwood. *Timberman.* 32:32, 46, 48. Jan. 1931. Illus. (U.S. Forest Serv. Forest Prod. Lab. Mimeo. 1297.)

Subtitled: Scientific research fails to bear out reputation of species for excessive shrinkage along the grain. Compression wood was found to be associated with the shrinkage in the siding examined; the authors believe that if redwood were marketed after proper drying, longitudinal shrinkage would be eliminated or greatly reduced.

754 KOLLMAN, FRANZ. 1936. Technologie des Holzes. Julius Springer, Berlin. 764 p. Tables. [In German.]

A compendium on wood, its properties, working, etc. Contains some data on redwood, largely from American sources.

Translation by C. Sterling, and others, Univ. of Calif., Dept. of Forestry, Berkeley [1940?]. 2 vol. Processed.

755 LAGRIMAS, MARTIN. 1939. Relative Durability of Untreated Redwood. *Philippine J. Forestry.* 2:259-264. 3rd Q. Illus., tables.

Twenty samples of Coast redwood were set in the ground and lasted from 6½ months to 3 years. The author concludes that redwood should be treated with preservatives in the tropics when placed in contact with the ground.

756 LUXFORD, R. F. 1930. Bark Characteristics as an Index of the Density of Redwood. *J. Forestry.* 28: 772-773. May 1930. Table.

Bark was classified into three principal types according to its external appearance; observations of the bark characteristics "indicate that it may be feasible to determine the relative specific gravity of redwood from the external appearance of the trees."

757 LUXFORD, R. F. 1930. Distribution and Amount of Moisture in Virgin Redwood Trees. *J. Forestry*. 28:770-772. May 1930. Tables.

Also in *Timberman*. 31:106. Feb. 1930. Tables.

Results of studies of trees from several stands comparing the moisture distribution from pith to bark at different levels in the tree. The findings should aid in segregating the wood to secure uniform drying. Graphs show the moisture distribution throughout cross sections taken at different heights, and the distribution of moisture of both sapwood and heartwood throughout the height of the tree.

758 LUXFORD, R. F. 1931. Effect of Extractives on the Strength of Wood. *J. Agr. Research*. 42:801-826. June 15, 1931. Tables.

"The tests reported here were made for the purpose of determining whether a relation exists between the extractive content of wood and its strength. Four distinctly different test methods were used, and all of them indicated strongly that extractives do affect the strength of wood. Of the properties studied, compressive strength parallel to the grain appears to be increased most by the presence of extractives, bending strength as measured by modulus of rupture next, and shock resistance least." Tables give data; in the case of redwood, a relationship between per cent of extractives and strength was found.

759 LUXFORD, R. F., and L. J. MARKWARDT. 1932. The Strength and Related Properties of Redwood. U.S. Dept. Agr., Wash., D.C. Tech. Bul. 305. 48 p. Illus., tables.

Specific gravity determinations were made on small specimens of virgin-growth and second-growth trees, selected in different localities from sites that covered the range of growth conditions; strength and related properties tested in woods representative of the average and the range in specific gravity of redwood; factors affecting the properties and uses of redwood, concerned chiefly with virgin-growth redwood. Discussion of methods and results; tables summarize data. List of literature cited. (Note: See also Selwyn J. Sharp, 1933, A Technical Study of Redwood.)

760 McKEE, F. A. 1906. Fire-resisting Qualities of Redwood. *Sci. Amer.* 94 (ser. 2): 475. June 9, 1906.

A letter to the editor stating the resistance of redwood to fire. Written in reply to an article (*Sci. Amer.*, May 12, 1906, p. 393) on the San Francisco earthquake of 1906, which stated that redwood was in every way as objectionable as pine in its ease of igniting and fierceness of burning.

761 MANSON, BYRNE C. 1951. Fire Resistance; Redwood Interior Paneling and Millwork. Calif. Redwood Assoc., Redwood Research Rpts. Research Project O.11615-A. [5] p.

Test performed to establish a fire hazard classification for redwood in accordance with test procedure established by Underwriters' Laboratories, Inc., Chicago, Ill.

762 MARKWARDT, L. J. 1930. Comparative Strength Properties of Woods Grown in the United States. U.S. Dept. Agr., Wash., D.C. Tech. Bul. 158. 38 p. Tables.

"The information contained in this bulletin is of value in making comparisons of species of wood in order to determine the choice of species for specific purposes." Tables of comparative properties of clear wood for weight, shrinkage, composite strength values; fiber stress in bending.

762a MARKWARDT, L. J., and T. R. C. WILSON. 1935. Strength and Related Properties of Woods

Grown in the United States. U. S. Dept. of Agr., Wash., D.C. Tech. Bul. No. 479. 99 p. 21 Tables.

The standard reference for mechanical and physical properties of wood. Redwood included. Extensive tables on properties of wood. Supersedes U. S. Dept. of Agr. Bul. No. 556 by J. A. Newlin and T. R. C. Wilson.

763 MARTEL, R. R. 1920. Tests of Bearing Strength of Redwood Agree With Howe's Formula. *Engineering News-Record.* 85:959. Nov. 11, 1920.

764 MYER, J. E. 1922. Ray Volumes of the Commercial Woods of the United States and Their Significance. *J. Forestry.* 22:337-351. April 1922. Table.

Ray volume of redwood is 7.85% with a variation in samples of 2.5%. Average for all softwoods is 7.8% with average variation of 2.0%.

765 NEUBAUER, L. W. 1949. Redwood Boards. *Calif. Agr.* 3:15-16. Jan. 1949. Illus., tables.

Report on decay, termite and weathering exposure tests made at Davis, Calif., over a period of 12 years.

766 NORTON, J. E. 1901. On the Alleged Immunity of Redwood to Attack by Termites. In *U.S. Dept. Agr., Div. of Entomology, Bul. 30 (ser. 2).* p. 95-96.

The Division received a letter (through lumber merchants) from Mr. Norton in Manila indicating that redwood is not attacked by the Manila white ant, or Annia.

767 THE PACIFIC LUMBER CO. 1916? California Redwood Lumber. Pub. and Comp. by E. W. Neunaber, San Francisco. [47 p.] Illus.

"In the interests of the Redwood industry." Advertisement featuring durability, fire and decay resistance, freedom from pitch, absence of shrinkage. The uses for which redwood is excellent are emphasized. Illustrations are of redwoods, lumbering, and products.

768 PARKER, W. B. 1911. Redwood Attacked by Termes Lucifugus. *J. of Econ. Entomology.* 4(5):422.

Termites were found in the string pegs and trellis poles of a hop yard near Sacramento.

769 RANDALL, M., and DOODY, T. C. 1938. Service of Paint on Woods Treated with Termite Repellents. *Industrial and Engineering Chem.* 30:444. April 1938.

770 RECORD, SAMUEL J. 1914. The Mechanical Properties of Wood. John Wiley & Sons, New York. 165 p. Tables, biblio., index.

Tables summarize data on bending, shearing, and compression for green and air-seasoned redwood, and shrinkage. A textbook. (See also G. A. Garratt's work of the same title.)

771 REED, S. ALBERT. 1906. The San Francisco Conflagration of April, 1906. [New York? 1906.] 23 p. Illus., maps.

Special report to the National Board of Fire Underwriters, Committee of Twenty. The effect of fire on various types of building materials is given; 136 pictures of buildings in San Francisco. Unlike contemporaneous publications, it does not mention redwood for its fire resistance.

772 RENO, JOHN. 1952. Paint Troubles on Redwood Siding — Causes and Cures. [Reprinted from] *Amer. Lumberman & Building Prod. Merchandiser.* 4 p. Illus.

773 RENO, JOHN. 195? Screw Holding Properties of Redwood. Pacific Lumber Co., Chicago. 2 p. Processed.

774 ROSS, J. D. 1955. Chemical Resistance of Western Woods (Abtract). Forest Prod. Research Soc., *Forest Prod. J.* 5:27-A. April 1955.

13 woods, including redwood, were tested for resistance to various chemical solutions. No consistent difference in resistance to attack was found among the species.

775 ROWLEY, F. B. 1933. The Heat Conductivity of Wood at Climatic Temperature Differences. *Heating, Piping & Air Conditioning.* 5:313-323. June 1933.

Reports upon conductivity tests of about 30 woods "to determine the effect of density and moisture content in the thermal conductivity. . . ."

776 SCHMOOK, P. M. 1925. An Exceptional Example of Wood Endurance. *Amer. Forests.* 31:224-225. April 1925. Illus.

Popular. Describes two instances of trees growing on fallen redwood logs, which are still sound. One log had fallen approximately 200 years ago, the other at least 350 years ago.

777 SCHMUTZ, F. C., and F. C. PALMER. 1930. Drying of Exterior Paints Under Various Weather Conditions and Over Different Woods. *Industrial and Engineering Chem.* 22:84-87. Jan. 1930. Tables. Discussion. 22:400-401. April 1930.

Five woods were used under three sets of conditions; high humidity and low temperature showed a retarding effect in drying, there being a distinct increase in time for redwood and cypress.

(Note: See also issue of April 1930, p. 400-401, for letters criticizing the methodology and findings, and a reply by the authors.)

778 SHARP, SELWYN J. 1933. A Technical Study of Redwood. *Forest Worker.* 9:21. Jan. 1933.

A review, with comments on industry practices, of U.S. Dept. of Agr. Bul. 305, "The Strength and Related Properties of Redwood," by R. F. Luxford and L. J. Markwardt.

779 SHERRARD, E. C., and E. F. KURTH. 1933. The Crystalline Coloring Compounds in Redwood Extract. Forest Prod. Lab., Madison, Wisc. 8 p. Mimeo. R-987.

Also in *Termites and Termite Control,* Univ. of Calif. Press, Berkeley, 1934, p. 519-523; *J. of Amer. Chem. Soc.,* 55: 1728, 1933.

"This paper describes the isolation and several properties of two crystalline coloring substances which together with certain of their derivatives, may be responsible for the red and brown colors in seasoned redwood." The compounds were named sequoyin and isosequein; through hydrolysis with dilute acids sequein and sequeinol have been obtained from sequoyin.

780 SHERRARD, E. C., and E. F. KURTH. 1933. Distribution of Extractive in Redwood: Its Relation to Durability. *Industrial and Engineering Chem.* 25:300-302. March 1933. Illus., tables. (U.S. Forest Serv. Forest Prod. Lab, Mimeo. R-988.)

Also in *Termites and Termite Control,* Univ. of Calif. Press, Berkeley, 1934, p. 514-518.

"The aqueous extractive in young, second-growth redwood trees is comparatively uniformly distributed throughout the heartwood of the trunk. In old, virgin-growth trees there is a decrease of extractive at the center of the trunk with decrease in height in the tree, and a large increase of extractive at the outer edge of the heartwood with decrease in height in the tree. The durability of redwood is attributed to the nature of the extractive and varies with the extractive distribution." Figures show the distribution of extractives in redwood; tables are on height, weight, and extractive content.

781 SNYDER, THOMAS ELLIOTT. 1935. Our Enemy the Termite. Comstock Pub. Co., Ithaca, New York. 196 p. Illus.

Reference to *Kalotermes* being found in the redwood at Fort Ross in 1927, p.

9. Two other references to the resistance of redwood to termites.

782 SNYDER, THOMAS E. 1921. White Ant Proof Wood for the Tropics. *J. of Econ. Entomology.* 14:496. Dec. 1921. Table.

Table shows results of tests on a number of woods; heartwood of redwood was not attacked either in tests or under natural conditions.

783 STAMM, ALFRED J. 1929. The Fiber-Saturation Point of Wood as Obtained from Electrical Conductivity Measurements. *Industrial & Engineering Chem. Analytical Ed.* 1:94-97. April 15, 1929. Tables.

No perceptible deviation between the results for green redwood and for resoaked redwood was observed; removing the extractives of redwood raises its fiber-saturation point.

784 STAMM, ALFRED J., and W. K. LOUGHBOROUGH. 1942. Variation in Shrinking and Swelling of Wood. [Reprinted from] *Amer. Soc. of Mech. Engineers Trans.* 64: 379-386. May 1942. Illus.

Redwood was used to determine effect of extractives on shrinkage, and the authors conclude: "The data thus indicate that the shrinkage of redwood, which contains an appreciable amount of water-soluble extractives, is considerably lower than it would be if no extractives were present. It is largely for this reason that redwood and woods containing large amounts of water-soluble extractives shrink less than would be predicted on the basis of the shrinkage-specific gravity relationship to be considered later."

785 THELEN, ROLF. 1908. The Structural Timbers of the Pacific Coast. *Amer. Soc. for Testing Materials. Proc.* 8:558-567. June 1908.

From the indications of a series of tests conducted at the Univ. of Calif. the author believes that "redwood is a timber of a high order of structural merit, ranking with Douglas fir and longleaf pine in strength."

786 UNITED PRESS. 1932. Huge Redwood Found Buried. *Calif. Lumber Merchant.* 10:3. Feb. 1, 1932.

Advertisement by Hammond Lumber Co. containing clipping from a newspaper, dated Oct. 6 [1931?], Watsonville, Calif. The news item states: "A giant redwood, seven feet in diameter, has been found in a perfect state of preservation 200 feet below ground here."

787 U.S. FOREST SERVICE. FOREST PRODUCTS LABORATORY. 1955. Wood Handbook. Govt. Printing Office, Wash., D.C. 528 p. Illus., tables, index. (Agr. Handbook No. 72.)

"Basic information on wood as a material of construction with data for its use in design and specification." Contains material on redwood including characteristics in relation to painting, thermal expansion, decay and termite resistance, strength, gluing, shrinkage, weathering, weight, working quality, and information on poles and bark.

788 VASEY, GEO. 1876. Forest Trees of the United States. U.S. Govt. Printing Office, Wash., D.C.

Durability and value of redwood, no. 404, p. 36.

789 WADE, BEN F. 1945. California Redwood in Industry. "Reprinted from *Pacific Purchasor*" of Oct. 1945, by Calif. Redwood Assoc., San Francisco, as Sec. II, File 2D1, Sheet 2. Illus.

Brief mention of early sawmill operations. Article is primarily concerned with the decay resistance, strength, and insulating properties of redwood, and the specific uses for these properties.

790 WADE, BEN F. 1947. Redwood. *Wood.* 2:29-30, 42-43. May 1947. Illus.

General description and uses of the wood.

791 WADE, BEN F. 1942. Redwood's Picture as an Industrial Wood. [Reprinted from] *Chicago Purchasor*. 4 p. March 1942. Illus.

General information on the durability and qualities of the wood.

Chemical Properties and Derivatives

792 ANON. 1954. Acids from Redwoods. *Chem. Engineering*. 61:158. April 1954.

793 ANON. 1949. Fluidized Wood: Fluidized Carbonization of Redwood and Other Agricultural Wastes May Provide Needed Carbon, Chemicals. *Chem. Industries*. 65:876-877. Dec. 1949.

794 ANON. 1943. Making Redwood Fibre Plastic Pulp. *Timberman*. 44:34, 36. Sept. 1943. Illus.

Popular article describing plant and method of reducing redwood for raw material for plastics of Shellerite type.

795 ANON. (Emanuel Fritz) 1927. Redwood Yields Tannin. *Amer. Forests*. 33:60-61. Jan. 1927.

Brief note on the yield of tannin from the heartwood of redwood.

796 ANON. 1943. Redwoods Yield Chemical Raw Materials. *Sci. Amer.* 169:249. Dec. 1943.

797 BUCHANAN, MARION A., H. F. LEWIS, and E. F. KURTH. 1944. Chemical Nature of Redwood Tannin and Phlobaphene. *Industrial and Engineering Chem.* 36:907-910. Oct. 1944. Biblio.

798 COOK, PAUL M. 1949. Charcoal and Chemicals from Redwood Wastes (Abstract). *In* R.R.L.C. Proc., May 1949, p. 23-24. Mimeo.

799 CROWE, J. M. 1943. New Plastic from Redwoods. *Chem. Industries*. 52:611. May 1943.

800 DADSWELL, H. E., and L. F. HAWLEY. 1929. Chemical Composition of Wood in Relation to Physical Characteristics. *Industrial and Engineering Chem.* 21:973-975. Oct. 1929. Table.

Gives chemical analysis of redwood for normal and compression wood of heartwood and sapwood.

801 DORE, W. H. 1920. The Determination of Cellulose in Woods. [Reprinted from] *J. of Indus. and Engineering Chem.* 12:264-269. March 1920. Tables.

Sawdust from sapwood of redwood was used in a study or "comparison of three proposed methods of treating woods and other lignified materials previous to chlorination in the cellulose determination." Results pertain to cellulose in woods in general.

802 DORE, W. H. 1920. The Distribution of Certain Chemical Constants of Wood Over Its Proximate Constituents. [Reprinted from] *J. of Indus. and Engineering Chem.* 12:473-476. May 1920. Table.

"A study is made of the distribution of the groups contained in redwood which yield furfural, acetic acid, and methoxy, with the object of learning their relation to the constituents cellulose and lignin."

803 DORE, W. H. 1919. The Proximate Analysis of Wood. [Reprinted from] *J. of Indus. and Engineering Chem.* 11:556-563; 12:476-479. June 1919/May 1920. Tables.

Proposed method for a summative proximate analysis of wood substance into the following fractions: loss on drying, benzene extract, alcohol extract, water-soluble, soluble in 1% sodium hydroxide, cellulose, and lignin. The first article cited outlines the analytical methods; the second notes the defects in the scheme. The author concludes that the investigation results are applicable to conifers only. Redwood was one of the woods studied. Tables give results of the tests. List of references cited at end of each article.

804 FRITZ, EMANUEL. 1925. Comments on "Forest Products Investigations." *J. Forestry.* 23:579-582. July-Aug. 1925.

Comments on a paper by Howard F. Weiss at the Annual Meeting of the Society of American Foresters dealing with utilization of wastes and general progress in forest products research. The author comments on tannins and the tanning process, using redwood wastes in logging and milling as an example.

805 HAWLEY, L. F., and LOUIS E. WISE. 1926. The Chemistry of Wood. Chemical Catalog Co., Inc., New York. 334 p. Index.

Text book. Specific references to redwood: proximate analyses of the wood, p. 176-177; reference to extractives, p. 125.

806 HUND, WALTER J. 1921. Phenols from Redwood. In *Chem. Abstracts.* 15:944. March 20, 1921.

U.S. Patent No. 1,365,407, Jan. 11, 1921. "Comminuted resinous redwood is heated in a retort to a temp. above 450°, and tar thus produced fractionated to obtain an oily distillate b. 150-250°. This distillate is treated with caustic alkali soln., which dissolves a portion of it and mixed phenolic substances are sepd. and recovered from the soln. They are stated to be marketable as a good grade of carbolic or cresylic acid."

807 LANGFORD, FRANK. 1921. Tanning Extracts. In *Chem. Abstracts.* 16:359. Jan. 20, 1922.

U.S. Patent No. 1,390,796, Sept. 13, 1921. "Comminuted wood of *S. sempervirens* or similar wood is mixed with pulverized clay or other aluminous earth, moistened with H_2O and treated with sulfurous gases and air and heated under pressure and leached to obtain a liquid ext. adapted for recovery of sulfates, sulfites and tannins."

808 LEWIS, HARRY F. 1946. The Chemical Nature of Redwood. [Reprinted from] *Vortex.* Vol. 7. 16 p. May 1946. Illus., tables.

Summary of the work of the Institute of Paper Chemistry on redwood, covering logging and mill wastes, bark products, extractives from bark and wood, tannin, etc.

809 LEWIS, HARRY F. 1943. Plastic Developments from Redwood. [Reprinted from] *Mech. Engineering.* p. 515-517. July 1943. Illus.

Report on the chemical make-up of the wood, extractives, tannins, and the use of wood flour for plastics. Same condensed in *Modern Plastics,* 20:91-2+, July 1943.

810 LEWIS, HARRY F., and others. 1945. Redwood Products as Inhibitors of Oxidation in Petroleum Hydrocarbons: Inhibition of Oxidation in Cyclohexene and Gasoline. *Industrial and Engineering Chem.* 37:1108-1111. Nov. 1945. Illus., biblio.

811 LEWIS, H. F., and others. 1945. Redwood Products as Inhibitors of Oxidation in Petroleum Hydrocarbons; Inhibition of Oxidation in Mineral Oils. *Industrial and Engineering Chem.* 37:988-990. Oct. 1945. Biblio.

812 MANSON, BYRNE C. 1949-1950. Derived Products from Redwood. Calif. Redwood Assoc., Research Rpts. Research Project 3.82411-A-B. [3] p. Processed.

Redwood extracts and their evaluation.

813 MANUEL, W. A., and H. F. LEWIS. 1944. Redwood Tannin: Use as a Depressant for Calcite and Quartz in the Flotation of Fluorspar. *Industrial and Engi-*

neering Chem. 36:1169-1171. Dec. 1944.

814 RITTER, GEORGE J., and L. C. FLECK. 1922. Chemistry of Wood: Results of Analysis of Some American Woods. *Industrial and Engineering Chem.* 14:1050-1054. Nov. 1922. Tables.

Includes the chemical composition of heartwood of redwood.

815 RITTER, GEORGE J., and R. L. MITCHELL. 1934. Composition of Three Fossil Woods Mined from the Miocene Auriferous Gravels of California. U.S. Forest Prod. Lab., Madison, Wisc. 5 p. Table. Processed.

Also in *J. Amer. Chem. Soc.*, 56:1603-1605, 1934.

Three fossil woods, a hard pine, a cedrus, and a sequoia were analyzed for extractives, pentosans, methoxyl, lignin and cellulose by the standard methods employed at the Forest Products Laboratory. For comparison, analytical data on the composition of two normal woods of similar species, ponderosa pine and redwood, are included.

816 SCALIONE, CHARLES C., and DAVID R. MERRILL. 1919. The Tannin Content of Redwood. [Reprinted from] *J. of Indus. and Engineering Chem.* 11:643-644. Table.

Results of the analysis of redwood bark, heartwood and sapwood for tannin content. The sawdust and the liquor from steam kilns is suggested as a source of tannin which is possibly satisfactory for tanning heavy sole leather.

817 SCHORGER, A. W. 1926. The Chemistry of Cellulose and Wood. McGraw-Hill Book Co., New York. 596 p. Tables, index, biblio.

Tables give analytical composition of wood. Many references to redwood throughout the text; the authority for the data is cited.

818 SEVERANCE, HAYWARD M. 1912. The Essential Oil of Sequoia Sempervirens. [Berkeley, Calif.] 8 p. Processed.

Thesis (M.S.) Univ. of Calif.

A description of the methods of extraction and the properties determined.

819 SHERRARD, E. C., and E. F. KURTH. 1928. Occurrence of Pinite in Redwood. *Industrial & Engineering Chem.* 20:722-723. July 1928. (U.S. Forest Serv. Forest Prod. Lab. Mimeo. 839.)

Gives the method of isolation, analysis and constants. Also mentions the finding of a new cyclose in the cold-water extract and proposes the name "sequoyite."

820 SHERRARD, E. C., and E. F. KURTH. 1929. Sequoyite, a Cyclose from Redwood. U.S. Forest Serv. Forest Prod. Lab., Madison, Wisc. 3 p. (Mimeo. R959.)

Also in *J. Amer. Chem. Soc.*, 51:3139-3141, Oct. 5, 1929.

Describes the isolation of a new cyclose from the heartwood of redwood; the authors have named it sequoyite.

821 STANFORD RESEARCH INSTITUTE. 1950. The Evaluation of Redwood Extracts. Stanford Research Inst., Stanford, Calif. April 25, 1950. SRI Project 180. 11 p. Tables. Processed.

Prepared for the Calif. Redwood Assoc.; signed by Jack J. Gordon, Project leader. "Redwood mill waste is rendered susceptible to saccharification by [a process]. The extract so obtained contains appreciable amounts of recoverable chemicals of a phenolic nature."

822 STEWART, JAMES K. 1938. Wood for Chemical Needs. *Chem. Engineering.* 45:612-662. Nov. 1938. Table.

Redwood was one of the woods tested; it rated very high except for hot solutions.

823 WISE, LOUIS E., and A. M. FAIRBROTHER. 1931. Comparison of Two Methods for Determination of Lignin. *Industrial and Engineering Chem.: Analytical Ed.* 3: 253-254. July 15, 1931. Table.

Several hardwoods and softwoods were analyzed for lignin by the Forest Products Laboratory and the Ross-Hill methods. Based on oven-dried unextracted wood, redwood gave: extractives, 6.98%; Forest Products Lab. method, 33.58% and 33.61%; Ross-Hill method, 36.65% and 36.56%.

824 ZAVALA, MANUEL L. 1920. The Destructive Distillation of Redwood and the Recovery of Phenol from Redwood Tar. [Univ. of Calif., Berkeley.] 27 p. Processed.

Thesis (M.S.) — Univ. of Calif. May 1920.

Pulp and Paper

825 ANON. 1914. Using Redwood for Pulp Manufacture. *Pioneer Western Lumberman.* 62:9-13. Oct. 1, 1914.

Possibility of a factory for manufacturing pulp from redwood being built at Eureka, Calif.

826 HARMON, FRANK C. 1930. Utilization of Redwood Waste. [Stanford Univ., Stanford, Calif.] Processed.

Thesis (Ph.D.) — Stanford Univ. 1930.

A study of chemical conversion of redwood wastes into paper, pulp board, etc. The original contains samples of paper and board made.

827 HOWELLS, T. A., and R. H. GOMS. 1951. Redwood Plastic Pulp for Phenolic Resin Laminates. *Tappi.* 34:121-125. Mar. 1951. Illus.

828 LEWIS, HARRY F. 1951. Redwood as a Potential Source of Pulp. *Tappi.* 34:385-390. Sept. 1951. Illus., tables.

Concludes that "old-growth redwood wastes do not look attractive as potential materials for chemical pulping under present conditions. . . . They have a definite place and are currently being used . . . in the manufacture of saturating felts and boards. . . . Second-growth redwood thinnings give higher yields of good quality unbleached or bleached sulphate pulps under favorable pulping and bleaching conditions. Although such thinnings would not be available in an amount of sufficient volume to support a large number of pulp mills, they would appear to be of current interest for a small operator."

829 SCHORGER, A. W. 1922. Pulp Possibilities on the Pacific Coast. *Timberman.* 23:35-36. May 1922. Illus.

Discussion includes the properties of redwood pulp for paper, and the utilization of redwood waste. The utilization of bark is suggested; a photo shows redwood bark being chopped for use in roofing felt.

830 WILSON, O. 1940. Pulp from Redwood Mill Waste. *Paper Trade Journal.* 111:20. July 4, 1940.

MANAGEMENT OF THE FOREST

GENERAL

831 ANON. (Philip Farnsworth.) 1950. Dedication of First Redwood Tree Farm. *Redwood News.* Calif. Redwood Assoc., San Francisco. p. 1-6. Fall 1950. Illus.

Illustrated with views of the dedication of the Hammond Lumber Company's Van Duzen Tree Farm.

832 ANON. 1950. First Redwood Tree Farm Dedicated. *Calif. Lumber Merchant.* 29:22, 24. Sept. 15, 1950. Illus.

The Van Duzen River Unit No. 1, of the Hammond Lumber Co.

833 ANON. 1953. Humboldt County Plans Ahead. *Timberman.* 54:51. July 1953.

Editorial comment on the Humboldt County Forestry Committee, established in 1952 for the purpose of making the county's timberlands continuously productive.

834 ANON. 1953. Humboldt's Forest Future. *Western Conserv. J.* 10:4-5, 41-43. May 1953.

Describes the 1953 program to set up permanent production in Humboldt County.

835 ANON. 1950. Logging Practices on First Redwood Tree Farm. *Timberman.* 51:56, 58, 60, 62. Aug. 1950. Illus.

Logging practices for continuous production on the Van Duzen River Tree Farm of the Hammond Lumber Co.

836 ANON. 1955. Perpetual Redwood Production, Union Lumber Co. *Timberman.* 56:9, 49-53.

A description of the Union Lumber Company's program for perpetual operation.

837 ANON. 1955. Redwood Areas: Better Methods. *New York Times.* Oct. 2, 1955. See also *Wells-Fargo Business Review,* Wells Fargo Bank, San Francisco, July 31, 1955.

A news item concerning programs for permanent operation of redwood mills.

838 ANON. 1942. Redwood Yield Experiment. *Timberman.* 43:74. Feb. 1942.

News note on the project of converting the Ben Joy Woods near Bodega into cash and at the same time maintaining productivity as a forest property.

839 ANON. (George Craig.) 1951. Small Tree Farm Profitable Business. *Timberman.* 52:94, 96. Aug. 1951. Illus.

Descriptive of the Joy Woods Tree Farm, Bodega, Sonoma County.

840 ANON. (George Craig.) 1951. Union Dedicates C. R. Johnson Redwood Tree Farms. *Timberman.* 52:82, 84. July 1951. Illus.

Reports the dedication of the Union Lumber Co. tree farms.

841 ANON. 1905. Why the Redwood Will Probably Not Become Extinct. *Country Life in Amer.* [*Country Life*]. 7:293. Jan. 1905.

Probably a condensation of R. T. Fisher, U.S. Forest Serv. Bul. 38, 1903. Covers reproduction, rate of growth, qualities of wood.

842 ALLEN, BEN S. 1951. The Redwood Lumber Industry Takes a New Inventory. *Calif. Lumber Merchant.* 30:52-53, 56. Dec. 1, 1951. Illus.

Article on the tree farm movement, and the establishment of the Redwood Region Conservation Council.

843 ALLEN, EDWARD T. 1911. Practical Forestry in the Pacific Northwest. Western Forestry and Conserv. Assoc., Portland, Ore. 130 p.

Coast redwood management and reproduction, p. 65-67; growth rate, p. 83.

844 BAHR, CARL. 1938. Economic Aspects [of Logging for Continuous Production in the Redwoods]. *Timberman.* 39:29. Oct. 1938.

Address at the 29th Pacific Logging Congress. Includes growth, utilization of waste, breakage, and selective cutting.

845 BRUCE, DONALD. 1922. A Perpetual Supply of Redwood. *Amer. Lumberman.* 2469:54-55. Sept. 9, 1922. Illus.

The author states the principal reasons why management of redwood lands should be possible and also explains the chief obstacles. Mentions several companies that are starting the practice of forestry on their holdings. Includes material on sprouting and planting, and the growth of 50-year second-growth is indicated.

846 CALIF. REDWOOD ASSOC. 1950. Redwood Region Tree Farms. Calif. Redwood Assoc., San Francisco. 12 p. Illus.

Folder describing the tree farm system. (Similar material also issued with same title for subsequent dates.)

847 CLARKE, WARREN T. 1922. Agriculture in Cut-over Redwood Lands. Calif. Agr. Expt. Sta., Berkeley. Bul. 350. p. 167-186. Illus., tables.

Discussion of the soils and climate of the region, and the costs of clearing the land for various agricultural uses. Concludes that in most cases it is more economic to reforest cutover land.

848 DRAKE, GEORGE L., EMANUEL FRITZ, and HENRY TROBITZ. 1952. Application of Forestry-by-the-Acre Through Diversified Production Application in the Western United States. In *Western Forestry and Conserv. Assoc. Proc.* 43:28-32.

Contains statements on changes in the redwood region, primarily concerning increased utilization of waste and second-growth.

849 EVANS, GRAY G. 1953. New Developments in Redwood Forest Practices. Soc. Amer. Foresters. Northern Calif. Section. *Papers presented* Dec. 5, 1953. p. 9-12. Processed.

In selective cutting, logging methods and practices, and protection.

850 FISHER, R. T. 1903. The Redwood. *Forestry Quarterly* [*J. of Forestry*]. 1(4):146.

Interesting account of the redwood, showing it to be possible, even practical, to hold cutover redwood lands for a second crop.

851 FRITZ, EMANUEL. 1954. California Redwood Region Looks Ahead. *Western Conserv. J.* 9:36, 55-56. July-Aug. 1954. Illus.

Article on selective cutting and the Tree Farm movement.

852 FRITZ, EMANUEL. 1952. Changes Wrought in Redwood Logging and Forestry Directed Toward Permanence. Univ. of Calif. School of Forestry, Berkeley, 1952. 4 p. Processed; included in Proc. 43rd Pacific Logging Congress, Nov. 10, 1952, Portland, Ore.

853 FRITZ, EMANUEL. 1950. Hammond's Tree Farms. *Redwood Log*, Hammond Lumber Co., Samoa, Calif. 3:1-3. Aug. 1950.

Describes what Tree Farms are and what they mean to the community.

854 FRITZ, EMANUEL. 1952. The Logger's Greatest Responsibility and Opportunity. The Pacific Logging Cong. *Logger's Handbook.* 12:60-61. Illus.

Similar article in *Redwood Region Logging Conf. Bul.*, Brizard-Matthews Machinery Co., Eureka, Calif. p. 3-4, 10. 1952.

Article concerned with "making the old growth last longer and keeping the cut-over lands productive [for] a permanent productive forest and a permanent lumbering industry."

855 FRITZ, EMANUEL. 1955. Logging: Good and Bad. [Univ. of Calif., School of Forestry, Berkeley.] 3 p. June 17, 1955. Processed.

Describes the need for Tree Farm Program education for both the public and for private owners. Not specifically on redwood.

856 FRITZ, EMANUEL. 1936. Private Forest Management in the Redwoods. *Forestry News Digest.* p. 19. Sept. 1936.

Brief review of the general plans for sustained yield management, and the increasing recreational values of redwood forests.

857 FRITZ, EMANUEL. 1941. Redwood Forest Problems Deserving the Attention of the State Board of Forestry. [Berkeley, Calif.] 5 p. Processed.

Address before the State Board of Forestry, Oct. 3, 1941. Brief outline of problems affecting the promotion of forestry, such as selective cutting, fire, and employment factors.

858 FRITZ, EMANUEL. 1950. Redwood Forests and Permanent Lumber Supplies. *Southern Lumberman.* 181:253-256. Dec. 15, 1950. Illus.

Article on the Tree Farm program, emphasizing selective cutting, and including a general description of the tree and the forest.

859 FRITZ, EMANUEL. 1930. The Status of Industrial Forestry in California. *J. Forestry.* 28:343-350. March 1930.

Based upon Report of the Committee on Industrial Forestry to the Society of American Foresters, Dec. 16, 1930, p. 26-32, by E. Fritz (mimeo.). This report sums up the results of private forestry to 1930. Gives number of operators, acreage owned, acreage cut over. Possibilities of sustained yield. Area planted 1922-1930. In the copy in the Univ. of Calif. Forestry Library are the original notes on each operating company.

The article covers the general purpose of management, fire control, selective cutting, reforestation, sustained yield management.

860 FRITZ, EMANUEL. 1948. Sustained Yield Forest Management Problems and Possibilities in California. [Univ. of Calif., School of Forestry, Berkeley.] 14 p. Sept. 9, 1948. Processed.

Also condensed in *Permanent Forest Production; an Analysis of Sustained Yield Management in Western Forests,* Western Forestry & Conserv. Assoc., Portland, Oregon, 1948, p. 39-43.

Covers briefly the resource, industry organization, ownership pattern, second growth, and utilization for California, including redwood.

861 FRITZ, EMANUEL. 1950. Timber and Men—What Is the Future of Western Private Forestry? *Pac. Discovery.* 3:20-28. Nov.-Dec. 1950. Illus.

General article on forest practices and logging methods in the West, including redwood forests.

862 FRITZ, EMANUEL. 1950. Tree Farms Mean Permanence for Fort Bragg. *Noyo Chief,* Union Lumber Co., Fort Bragg, Calif. 2:6-7. Sept. 1950. Illus.

Article on the establishment of tree farms on the Company lands, and what it means to the community. (Note: Also printed in the special "Tree Farm Issue," May 19, 1951, p. 4-5.)

863 FRITZ, EMANUEL. 1949. What's Ahead for the Redwood Industry. [Berkeley, Calif.] June 7, 1949. 35 p. Processed. (Copy located in the Library of the Calif. Redwood Assoc., San Francisco).

A statement presented by the author to the Calif. Redwood Assoc. urging acceleration of the forestry programs in the redwood belt. Paragraphs headed: Historical Background; The Redwood Industry; Effect of Selective Cutting; Permanent Production Possibilities; Centralized Peeling; Slash Disposal; Tree Farms; Utilization Standards; Products Other Than Lumber; A New Department [Forestry]; A New Policy; Necessary New Steps Toward Permanent Production; Sustained Yield; Advantages of Continuous Operation; Research; Industrial Relations; Public Relations.

864 FRITZ, EMANUEL, and A. W. ELAM. 1935. Progress of Lumber Code Forest Practice Rules in the California Redwood Region. Calif. Redwood Assoc., San Francisco. 8 p. Processed.

First report to the Forest Practice Committee, Jan. 15, 1935. Covers factors affecting logging and slash burning methods, tractors in the redwoods, fire fighting equipment, sustained yield and reforestation.

865 HAMATT, RICHARD F. 1922. California Redwood. *Californian.* 1:4-8. Jan. 1922. Illus.

Brief but good general description of the trees and forests, logging methods of the early days and of the time of the article, the possibilities of forestry methods, and some uses.

866 HOFSTED, EUGENE A. 1953. Continuous Forest Crops for Humboldt County. In *Western Forestry and Conserv. Assoc. Proc.* 44:27-28.

Brief report on the background and aims of the Humboldt County Forestry Committee.

867 HOFSTED, EUGENE A. 1954. Humboldt County Looks Ahead. *Redwood Region Logging Conf. Bul.,* Brizard-Matthews Machinery Co., Eureka, Calif. p. 6, 15.

Recounts the activities by the Humboldt County Forestry Committee and the Humboldt County Dept. of Forestry toward a permanent economy. (The author produces a monthly statement of departmental activities, since inception of the county department. Complete file in County Forester's office, Eureka.)

868 JEPSON, WILLIS L. 1946. [A Collection of Clippings.] 2 vols. Illus.

This scrap book contains a large number of clippings, mainly from San Francisco Bay newspapers, collected by Dr. Jepson between 1882 and 1946, and pertaining to the need for and establishment of forestry in California. Of historical and technical value.

869 JOHNSON, C. R. 1909. Conservative Lumbering. Commonwealth Club of Calif. *Trans.* 4:56-58. April 1909.

Paper read by the head of the Union Lumber Co., Fort Bragg, who was the first redwood man to give serious consideration to forestry practices. In this paper he speaks of experiments to reforest with eucalyptus to hasten the growth of redwood suckers; he also recommended burning the forest to remove the fire hazard but to keep fire out during reforestation. Eighty-five per cent of redwood is of sprout origin.

870 KIRKLAND, BURT P. 1946. Let's Grow Big Timber Too! *Amer. Forests.* 52:68-70, 91. Feb. 1946. Illus.

Stresses the desirability of growing large trees of high quality.

871 KNAPPEN, THEODORE M. 1923. The Undying Redwood Tree of Our Western Coast. *Amer. Rev. of Rev.* 67:293-298. March 1923. Illus.

The article states that redwood is very easy to propagate by sprouting, and that several lumber companies have adopted the program advised by D. T. Mason to manage their cutover lands for the production of a continuous crop of timber. The author tends to exaggerate redwood capacities.

872 KREIENBAUM, CHRIS H. 1950. Simpson Plan for Redwoods. *Simpson Lookout,* Simpson [Redwood] Logging Co., [Shelton, Wash.] 4:5. Dec. 1950.

Description of the logging and forestry plans for the Company's redwood property in Del Norte County, on a permanent basis.

873 KRUEGER, MYRON E. 1943. Preliminary Survey of Privately Owned Cutover Lands in California. Univ. of Calif., Berkeley, Jan. 22, 1943. Table. Processed.

Also in *J. Forestry,* 41:659-665, Sept. 1943.

The author concludes that there is no marked deterioration of the producing capacity of the soil on currently cutover redwood lands. Insufficient number of seed trees are being left for reproduction; selective cutting is recommended. One of the main problems is slash disposal.

874 MASON, DAVID T. 1923. Attitude of Redwood Lumbermen Toward Reforestation. *Commonwealth Club of Calif. Trans.* 18:178-180.

Paper read at the meeting of May 17, 1923, discussing California's forest problems. Tells of the interest of the redwood operators in reforestation, and gives the reasons why they will adopt such a policy.

875 MASON, DAVID T. 1922. California Redwood. Portland, Ore., Feb. 1, 1922 (rev. May 1, 1922). 77 p. Extensive biblio. Processed.

A report for six companies that wanted to determine the possibilities of permanent forest management. Includes: description of region; management systems; reforestation; land classification.

876 MASON, DAVID T. 1925. California Redwood Reforestation. *Amer. Lumberman.* p. 36-37. April 18, 1925. Illus.

Article on the reforestation policy of several redwood lumber companies, representing 70 per cent of the lumber produced annually in the region. Brief discussion of the nursery and planting program, fire protection, and the work of the Mendocino Redwood Fire Protective Assoc. and the Humboldt Redwood Reforestation Assoc.

877 MASON, DAVID T. 1922. Forest Management in the Redwood Region of California. *J. Forestry.* 20:396-397. April 1922.

Similar title in *Timberman,* 23:34, May 1922, illus.; this is a popular resumé but contains similar information. Also, *Timberman,* 23:104-106, Nov. 1922.

General description of the region and the remaining steps necessary to solve the problems for permanent production of crops of timber. Reports that the Union Lumber Co. had adopted a policy of permanent forest management; six other companies representing ⅔ of the redwood cut were considering the possibilities of forest management.

878 MASON, DAVID T. 1952. Forests for the Future. Minn. Hist. Soc., Saint Paul, Minn. 283 p. Illus., index.

Subtitled: The Story of sustained yield as told in the diaries and papers of David T. Mason, 1907-1950. Selected extracts from the author's diary; contains several references to his work in the redwood region.

879 MASON, DAVID T. 1928. The Redwoods. *J. Forestry.* 26:347-351. March 1928.

Subtitled: What factors have favored or retarded the private practice of forestry in the Douglas fir and the white pine regions by comparison with the redwood region.

880 MASON, DAVID T. 1924. Reforestation in Western United States. In *Chamber of Commerce of the U.S. Western Div. Second Mid-Year Meeting,* Los Angeles, Dec. 2 and 3, 1924. 12 p. Processed.

Address on reforestation delivered at the meeting. Discussion of lumber operations on public and private lands and the problems involved, including the statement that the redwood lumbermen are the first important group in the country to adopt a program of reforestation.

881 METCALF, WOODBRIDGE. 1922. Forestry Among the Giants. [Reprinted from] *Amer. Forestry* [*Amer. Forests*]. 28:643-654. Nov. 1922. Illus.

Describes redwood trees and forests, and the proposal to practice forestry. Gives interesting data on sizes, yields.

882 MUNNS, EDWARD N. 1923. The Forest Situation in California, 1923. Calif. State Board of Forestry, State Printing Office, Sacramento. Circ. 7 (part 1). p. 1-26. Illus., tables.

Tables include forest area and stand in acres and volume for virgin and cut-over lands; status of privately owned forest lands by county (these figures for 1921 primarily); the lumber production by 5-year periods from 1900-

1920. Comments on redwood forest renewal, the need for planting, slash disposal.

883 MUZZALL, ALEXANDER H. 1916. The Management of Redwood. [Univ. of Calif., Berkeley.] 117 p. Illus., tables. Processed.

Thesis (M.S.) — Univ. of Calif. May 1916.
A general work covering most aspects of management. Profusely illustrated.

884 NELSON, DeWITT. 1951. Joy Woods Tree Farm Dedication. *Western Building Rev.* 26:14-17. Sept. 1951.

Dedicatory address calling attention to the importance of small forest areas.

885 PERSON, HUBERT L. 1940. Redwood Experimental Forest Established. *Calif. Ranger.* 40:1. U.S. Forest Serv., Region 5, San Francisco. Aug. 30, 1940. Processed.

News note announcing the start of the Yurok experimental area, in Del Norte County, and the purposes of the unit.

886 PINCHOT, GIFFORD. 1947. Breaking New Ground. Harcourt, Brace & Co., New York. 522 p. Illus., index.

The author's "personal story of how Forestry and Conservation came to America." Contains a few general references to Coast and Sierra redwood.

887 PINE, WM. DOUGLAS. 1952. Humboldt's Timber — A Present and Future Problem. Humboldt County Board of Supervisors, [Eureka, Calif.] 24 p. Illus., tables. Processed.

A report by the County Farm Advisor to the Board of Supervisors on the forest situation. Pertains mostly to Douglas fir timber but is applicable also to redwood. The purpose of the study was to determine the impact of overcutting on Humboldt economics.

888 RAYMOND, FRANCIS H. 1949. Results on Operation of State Forest Practice Act. *Redwood Region Logging Conf. Bul.*, Brizard-Matthews Machinery Co., Eureka, Calif. p. 2.

889 RECKNAGEL, A. B. 1935. Summary of Forest Practice Rules Under the Conservation Code (Article 10). *J. Forestry.* 33:792-798. Sept. 1935.

Contains extract from Lumber Code Authority Bulletin 124, concerning redwood.

890 RHODES, GEORGE H. 1922. Growing of Timber on Private Cut-over California Lands. *Lumber World Review* [*Chicago Lumberman*]. 42:33-34. Jan. 25, 1922. Tables.

General discussion of the problem; the statement is made that fire protection is all that is necessary to assure redwood restocking through sprouts and seedlings. Tables give estimated carrying costs for 10-year periods, up to 100 years.

891 SCHOFIELD, W. R. 1947. Progress in Private Forest Management in the Redwood Region. *Western Forestry and Conserv. Assoc. Proc.* 38:34-35.

In terms of cutting practices, protection, and increased utilization.

892 SNYDER, STEWART M. 1944. Redwood Forestry. *Amer. Forests.* 50:288-290, 318. June 1944. Illus.

A description, with illustrations, of the forestry operations at Joy Woods near Bodega in Sonoma County.

893 SPINNEY, WESLEY. 1955. Timber Sales [on the Six Rivers National Forest]. *Redwood Region Logging Conf. Bul.*, Brizard-Matthews Machinery Co., Eureka, Calif. p. 15.

Brief discussion of the cutting problems on government-owned lands, with reference to specific species. Refers mainly to Douglas fir but applies also to the redwood unit of the Forest.

894 U.S. SOIL CONSERVATION SERVICE. 1946. Farm Forestry in California, 1940-1945. Calif. Dept. of Nat. Resources, Div. of Forestry. 38 p. Illus., tables, map.

Includes description of farm forestry projects in the redwood region of Sonoma County, Calif.

895 WOHLENBERG, E. T. F. 1948. General Problems of Management in Growing a New Forest in the Redwood Region. In *Western Forestry & Conserv. Assoc. Proc.* 39: 16-18. Dec. 1948. Table.

Primarily on financial aspects; the effect on cost due to delay in restocking. Comments by E. Fritz, p. 17-18.

ECOLOGICAL AND SILVICAL FACTORS

896 ANON. (Emanuel Fritz.) 1942. Selective Logging of Redwood. *Timberman.* 44:66. Nov. 1942.

Also in *West Coast Lumberman* [*Lumberman*]. 69:28, Nov. 1942, with title "Experiment Proves Value of Selective Logging."

Contains data on the growth of residual trees. Data from a sample tree cut from a group left by loggers 62 years before on the Van Duzen River: sawmill record showed 56% of upper grades; increase in growth in 62 years was 1693 ft., or 27.3 board feet per year, as against 2.5 b.f. in the 144 years prior to the first logging.

897 BAKER, FREDERICK S. 1929. Amount of Injury to Seedlings of Various Species and Ages at Given Surfaces and Temperatures. *J. of Forestry.* 27:970, 972. Dec. 1929.

898 BAKER, FREDERICK S. 1941. Density of Cell Sap in Redwood. *Ecology.* 22:84-85. Jan. 1941. Tables.

Data indicate that "in the crown there is virtually no variation of water content of leaf tissue correlated with height, but that there is a general tendency for osmotic concentration to increase. . . ."

899 BARNES, JOHN S. 1924. A Site Classification for Virgin Redwood. *Timberman.* 25:53. June 1924.

Discusses site classification as a method for determining the amount of timber forest lands will produce.

900 BATES, C. G., and JACOB ROESER. 1928. Light Intensities Required for Growth of Coniferous Seedlings. *Amer. J. Bot.* 15:185-194. March 1928. Tables.

Findings indicate that "redwood stands out as by far the most efficient mechanism for photosynthesis."

901 BYERS, HORACE R. 1930. Summer Sea Fogs of the Central California Coast. Univ. of Calif. *Pubs. in Geog.* 3:291-338. Univ. of Calif. Press, Berkeley. Tables.

902 CANNON, W. A. 1901. On the Relation of Redwoods and Fog to the General Precipitation in the Redwood Belt of California. *Torreya.* 1:137-139. Dec. 1901.

It is the opinion of the author that redwoods precipitate moisture from fog, and he gives two cases to support his belief.

903 CANNON, W. A. 1914. Specialization in Vegetation and in Environment in California. *Plant World.* 17:223-237. Aug. 1914.

Plants in relation to climate and physical surroundings; Coast and Sierra redwood referred to on p. 229, 231-232.

904 CHEYNEY, EDWARD G. 1942. American Silvics and Silviculture. Univ. of Minnesota Press, Minneapolis. 472 p. Illus., index.

Textbook. Includes description of the fog belt type, the tree, and silviculture.

905 CHEYNEY, EDWARD G. 1929? Sylvics; A Text Book for College Classes. Burgess-Roseberry Co., Minneapolis, Minn. 149 p. Processed.

Gives detailed information about the two types: redwood slope and redwood flat type, mentioning the associated species, on p. 60. A concise ecological and silvical description of the tree, p. 137-139, covering tolerance and light requirements, root system and reproduction, water and soil requirements.

906 CONE, MARY. 1876. Two Years in California. S. C. Griggs & Co., Chicago.

Effect of redwood forests on rainfall, conditions essential to their growth, their location, and size of redwood trees, p. 114-115.

907 COOPER, WILLIAM S. 1917. Redwoods, Rainfall and Fog. *Plant World.* 20:179-189. June 1917. Tables, map.

During the rainy seasons of 1913-1914 and 1914-1915 the author investigated the distribution of the redwood of the Santa Cruz mountains as related with precipitation, fog and other habitat factors of the area. He concludes that "heavy winter precipitation is necessary [and] abundant summer fog is also essential."

908 CRAIG, H. 1954. Carbon-13 Variations in Sequoia Rings and the Atmosphere. *Science.* 119:141-143. Jan. 29, 1954. Biblio.

909 DAVY, J. BURTT. 1932. The Redwoods of California. *Nature* [London]. 130:845. Dec. 1932.

Letter to the editor concerning the importance of litter on the forest floor to conserve fog drip, and the use of a mulch in English plantings to preserve the moisture.

910 DOUGLASS, A. E. 1928. Climatic Cycles and Tree-growth, vol. 2: A Study of the Annual Rings of Trees in Relation to Climate and Solar Activity. Carnegie Inst. of Wash., Wash., D.C. Pub. No. 289:2. 166 p.

Redwoods collected from a group near Santa Cruz in 1921 and from Scotia in 1925 could not be cross-identified, and therefore could not be used in ring dating studies; this may be due to fog or to the sprouting habit, p. 55-57.

911 ELLER, WILHELM. 1923. Humic Acids: IV; Preparation and Properties of Artificial and Natural Humic Acids. *Justus Liebig's Annalen der Chemie,* Leipzig. 431: 133-161. [In German.]

Reference to redwood, p. 159. (Reviewed by C. J. West in *Chem. Abstracts,* 17:2269-2270, 1923.)

912 FRITZ, EMANUEL. 1950. Effect of Release from Crowding on Growth Rate. *Redwood Region Logging Conf. Bul.,* Brizard-Matthews Machinery Co., Eureka, Calif. p. 12-13. Illus., table.

Includes a table on accelerated growth, and a photograph of the butt and top of a tree.

913 FRITZ, EMANUEL. 1938. Growth of Redwood Trees Left After Selective Logging. *Timberman.* 39: 14-16, 53-55. June 1938. Illus., tables.

Article gives volume growth and grade of lumber produced by redwood trees after having been released from suppression or crowding by removal of the competing trees. Records on some trees go back over 60 years. Six illustrations depict accelerated growth since release, grade of lumber, selective logging.

914 FRITZ, EMANUEL. 1949. What Is the Effect of Selective Logging on Residual Trees? *Redwood Region Logging Conf. Bul.,* Brizard-Matthews Machinery Co., Eureka, Calif. p. 5. Illus.

Brief article on accelerated growth.

915 GANNETT, HENRY. 1906. Certain Relations of Rainfall and Temperature to Tree Growth. *Amer. Geog. Soc., Bul.* 38:424-434. July 1906. Tables.

Annual temperature and rainfall of primary importance to forest trees. Tables give average temperature and rainfall for the redwood region. Limiting rainfall is given as 30 inches.

916 GILLETTE, H. P. 1930. Alternate Wet and Dry Periods of 11.2 Years Shown by California Sequoias for 3125 Years. *Water Works & Sewerage.* 77:14-16. Jan. 1930.

917 HOLMES, L. C., and J. W. NELSON. 1917. Reconnaissance Soil Survey of the San Francisco Bay Region, California. U.S. Bur. of Soils, Wash., D.C. 112 p. Illus., tables, map.

Primarily on soils, but containing brief sections on the topography, climate, and general vegetation; few brief references to Coast redwood.

918 KITTREDGE, JOSEPH, JR. 1940. A Comparison of Forest Floors from Plantations of the Same Age and Environment. *J. Forestry.* 38: 729-731. Sept. 1940. Table.

Article on the effectiveness of various species in contributing to the net accumulation of forest floor; plantations of redwood 30 years old produced 11.2 metric tons per acre.

919 KITTREDGE, JOSEPH, JR. 1938. The Magnitude and Regional Distribution of Water Losses Influenced by Vegetation. *J. Forestry.* 36:775-778. Aug. 1938. Table.

For the redwood forests the annual water losses (the difference between precipitation and run-off) are given as 25 to 55 inches.

920 LAUNCHBAUGH, JOHN. 1955. Soil Survey [Humboldt County]. *Redwood Region Logging Conf. Bul.*, Brizard-Matthews Machinery Co., Eureka, Calif. p. 8.

Describes the soil survey in its second year, the purpose and methods.

921 LEIBERG, J. B. 1899. Is Climatic Aridity Impending on the Pacific Slope? *Natl. Geog. Mag.* 10:160-181. May 1899.

Second part of title: "The Testimony of the Forest." Redwood specifically discussed on p. 179-180: factors delimiting the distribution of redwood are given; the author states that redwood is not reproducing and prophesies the extinction of the species "at no remote period."

922 LEMMON, JOHN G. 1888. Pines of the Pacific Slope. In *(Second) Bien. Rpt. of the Calif. State Board of Forestry, 1887-1888.* State Printing Office, Sacramento. p. 53-141.

Report of the Botanist of the Calif. State Board of Forestry. Brief mention only of redwood on p. 58: the poor and shallow soil of Mendocino grows the tallest and most dense stands.

923 MacDOUGAL, DANIEL T. 1929. Growth in Trees. Carnegie Inst. of Wash. [Wash., D.C.] *Year Book No. 28.* p. 165-166.

Brief report on growth studies. "Girdling is followed by normal growth of a redwood trunk above the girdle and by diminished enlargement below the girdle," and the relation of growth to amount of precipitation and temperature.

924 MacGINITIE, HARRY D. 1933. Redwoods and Frost. *Science.* 78: 190. Sept. 1, 1933.

Reports the frosting of new growth on trees in exposed situations and the outer foliage of young trees during a cold period in December of 1932 in Del Norte and northern Humboldt counties. Suggests that the occasional cold winters kill off seedlings in the northern part of the range, which may be trying to advance the northern boundary of the redwoods.

925 PALMER, ANDREW H. 1917. Fog Along the California Coast. U.S. Weather Bur. *Monthly Weather Review.* 45:496-499. Oct. 1917. Tables.

Primarily concerns summer and winter fog as it relates to marine disasters, but mentions Coast redwood's ability to precipitate fog.

926 PERSON, HUBERT L. 1942. Increment of Residual Redwoods. *J. Forestry.* 40:926-929. Dec. 1942. Illus., tables.

Accelerated growth and increment following release by logging is given on a basal area basis.

927 PURDY, CARL. 1890. The Redwood Forest. *Garden and Forest.* 3:235. May 14, 1890.

The distribution of redwood and its relation to the fog belt; the associated species, trees and herbaceous vegetation; testimony of the author that the trees precipitate fogs.

See also *The Garden* [London], 37:967, May 31, 1890.

928 RUSSELL, RICHARD JOEL. 1926. Climates of California. Univ. of Calif. Press, Berkeley. 84 p. Maps. (Univ. of Calif. Pubs. in Geog., vol. 2, no. 4.)

Description of the "Fog Belt" in the redwoods, p. 82.

929 SHANTZ, H. L. 1950. The Ecological Approach to Land Management. *J. Forestry.* 48:673-675. Oct. 1950.

Editorial on the general problem of land management planning; contains a reference to redwood and the importance of ecological considerations in handling redwood lands.

930 SHIRLEY, HARDY L. 1929. Influence of Light Intensity and Light Quality Upon the Growth of Plants. *Amer. J. Bot.* 16:354-388. May 1929. Illus., tables.

Experiments show that "redwood and loblolly pine are able to survive for a period of 6 months under a light intensity at which they are barely able to increase in dry weight." Photographs show roots and tops of test seedlings under 3 light conditions; graphs of dry weight and light intensity. List of literature cited.

931 SHREVE, FORREST. 1924. Evaporation in Redwood Habitats. Carnegie Inst. of Wash. [Wash., D.C.] *Year Book No. 23.* p. 141-142.

Porous-cup atmometers placed in various sites at Rocky Creek, near Carmel, Calif., indicate that evaporation rate during the period following the rainless spring months and preceding the midsummer fogs is a determining factor in the local distribution of redwood.

932 SHREVE, FORREST. 1927. The Physical Conditions of a Coastal Mountain Range. *Ecology.* 8:398-414. Oct. 1927. Illus., tables.

Rainfall data are listed for two stations in a redwood forest in Rocky Canyon in the Santa Lucia range south of Monterey. Evaporation studies had the following values on the basis of the heavy mature redwood forest as unity: young forest, 1.2; openings in the forest, 1.9; chaparral alongside a windswept group of stunted redwoods, 2.4; Xerophytic Scrub on south-facing slope near the forest, 3.1. Moisture ratio (the ratio of evaporation to soil moisture) is ten times as great for manzanita chaparral near the coast as for the redwood forest.

933 SHREVE, FORREST. 1927. Soil Temperatures in Redwood and Hemlock Forests. *Torrey Bot. Club Bul.* 54:649-656. Dec. 1927. Tables.

The differences in soil temperatures were studied for growth of redwood roots under various soil and cover conditions; the region studied was in the Santa Lucia range south of Monterey. Concludes that more work would be required before "we are in a position to use soil data, in conjunction with others, in determining the advisability of efforts toward reforestation or afforestation in a given locality."

934 SHREVE, FORREST. 1927. The Vegetation of a Coastal Mountain Range. *Ecology.* 8:27-44. Jan. 1927. Illus., maps.

General ecological study of the vegetation of the Santa Lucia mountains south of Monterey. Redwood forms the dominant type of the hygrophtic forest.

935 STORIE, R. EARL. 1940. Natural Land Divisions of Santa Cruz County, California: Their Utilization and Adaptation. Univ. of Calif., Agr. Expt. Sta., Berkeley. Bul. 638. 56 p. Illus., tables, map.

Refers principally to agricultural uses, but includes timberland. Map in colors showing natural land divisions.

936 STORIE, R. EARL, and others. 1944. Soil Survey of the Santa Cruz Area, California. U.S. Bur. of Plant Industry, Soils, and Agr. Engineering, Wash., D.C. 90 p. Illus., map. (Soil Survey, series 1935, no. 25.)

Primarily on the soils, but containing data on climate, topography, and general vegetation; a few brief references to redwood.

937 U.S. FOREST SERVICE. 1908. Redwood. U.S. Forest Serv., Wash., D.C. Oct. 29, 1908. Silvical Leaflet 18. 5 p.

938 U.S. FOREST SERVICE. 1943. Redwood. U.S. Forest Serv., Wash., D.C., March 1943. Its *Useful Trees of the U.S.*, No. 17. [4] p. Illus. Processed.

General range and growth factors.

939 WATSON, EBENEEZER B., STANLEY W. COSBY, and ALFRED SMITH. 1925. Soil Survey of the Eureka Area, California. U.S. Dept. of Agr. Bur. of Soils, Wash., D.C. p. 851-881. Illus., tables, map.

The history, climate, and agriculture are treated briefly. The main part of the text describes the soil types in detail, giving the original vegetative cover in each case. The area and per cent of the different soil types are included in a table. Soil types are distinguished on the map (1 inch = 1 mile) by color.

940 WOODWARD, K. W. 1917. Tree Growth and Climate in the United States. *J. Forestry.* 15:521-531. May 1917.

Author estimates size redwood will attain in 100 years.

SILVICULTURE (Old-Growth)

941 ANON. (C. G. Sturm.) 1954. Conservation and Utilization: Pacific Lumber Company. *Pac. Logger.* 2: 12-13, 23-24. Nov. 1954. Illus.

Describes the selective cutting of the Pacific Lumber Co., Scotia, Calif.

942 BAKER, FREDERICK S. 1934. Theory and Practice of Silviculture. McGraw-Hill Book Co., Inc., New York. 502 p. Illus., index, biblio.

Textbook. General silviculture, with specific references to redwood for accelerated growth, coppice system, and applied silviculture.

943 FISHER, RICHARD T. 1901. The Work of the Division of Forestry in the Redwoods. *Sierra Club Bul.* 3:200-202. Feb. 1901. Illus.

Outlines "a study . . . to furnish a basis for scientific lumbering" with a view to the practicability of sustained yield management.

944 FRITZ, EMANUEL. 1955. Cutting the Redwoods Selectively. *Amer. Forests.* 61:10-12, 44. Feb. 1955. Illus.

Contains a review of the reforestation programs in the redwood region, and the changes in logging methods aimed at continuous production.

945 FRITZ, EMANUEL. 1935. Forest Practice Developments in the California Redwood Region. Calif. Redwood Assoc., San Francisco. 3 p. Processed.

Paper presented before the Western Forestry and Conservation Assoc., Dec. 11, 1935.

946 FRITZ, EMANUEL. 1938. How Much Forestry is Needed in the Redwoods for Continuous Production? *West Coast Lumberman* [*Lumberman*]. 65:17-18. Nov. 1938.

Also in *Timberman*, 39:29-30, Oct. 1938, with title "Forestry in the Redwoods"; *J. Forestry*, 37:618-619, Aug. 1939.

The author points out that to "get full advantage from economic selective logging [the logger must] find out which trees are running up his costs. Once he knows which ones are profitable, he must find out how to leave the others intact and how to burn the slash without damaging them," and have good fire protection for all his land.

947 FRITZ, EMANUEL. 1950. The Redwoods of California. *Calif. Agr.* 4:8. April 1950.

Subtitled: Conservation of Sequoias possible through seedling maintenance and proper cutting practices. A general article on redwood forestry practices.

948 FRITZ, EMANUEL. 1949. Reforestation in Redwood: Historical Notes and Basic Principles. [Univ. of Calif. School of Forestry, Berkeley]. 4 p. Processed.

A brief history of reforestation, including the planting program of the 1920's, and a resumé of the principles for continuous production, with particular reference to selective cutting.

949 FRITZ, EMANUEL. 1950. What Is a Residual Tree? *Redwood Region Logging Conf. Bul.*, Brizard-Matthews Machinery Co., Eureka, Calif. p. 4.

950 HAIG, I. T. 1932. Comparative Timber-yields. *J. Forestry*. 30:575-578. May 1932. Tables.

Redwood ranks preeminently first of 12 commercially important conifers in terms of rate of growth and average annual yield, as determined by comprehensive studies on the individual species by the Forest Service and several forestry schools.

951 HALL, S. J. 1953. An Investment in a Small Forest Property in the Redwood Region. In *Western Forestry and Conserv. Assoc. Proc.* 44:26-27.

Describes management by selective cutting of a 2700-acre property known as the Russian Gulch Tract, in Sonoma County.

952 HALLIN, WILLIAM. 1934. Fast Growing Redwood. *J. Forestry*. 32:612-613. May 1934.

Record growth made by a stand east of Fort Bragg, Mendocino County, measured in 1933; "its average age was 260 years and its volume per acre, estimated by the International rule, was 776,600 feet b.m.; thus its annual growth had averaged 2,987 feet per acre."

953 KIRKLAND, BURT P. 1947. Report to the Redwood Industry. [The Amer. Forestry Assoc., Wash., D.C.] 27 p. Tables. Processed.

The author was Forest Consultant for the Forest Resource Appraisal of The American Forestry Assoc. It is primarily "concerned with forest conditions and measures necessary to perpetuate maximum production in quantity and quality and, in consequence, the maximum social and economic returns." The report covers resource, reproduction, sustained yield, lumber industry policy, cutting systems, and general management problems. Tables give production figures for 1904-1938, and timber cropland areas for the various redwood counties, by type of ownership. Marginal comments by E. Fritz.

954 LUMBER CODE AUTHORITY. 1934. Redwood Division: Forest Conservation Code and Rules of Forest Practice. Lumber Code Authority, Wash., D.C. *Bul.* Vol. 1, no. 124. May 26, 1934. 3 p.

Gives the rules for cutting and protecting redwoods as drawn up by the Redwood Forest Practice Committee, known as Conservation Article X of the National Recovery Act.

955 MERRILL, ELMER D. 1930. Forestry. In *Report of the Agricultural Experiment Station . . . from July 1, 1928, to June 30, 1929.* Univ. of Calif., Berkeley. p. 74-79.

Brief reports on projects. Summary of one project in lumbering "indicates that reforestation by planting in the redwood region is wrong, and that the second crop should be obtained instead from trees of unmerchantable or unprofitable sizes and that a reasonable number of such trees should be left and protected during the logging operations." A study on the discoloration of painted redwood siding was due to leaching from condensation of water between the walls. Mentions the initiation of studies on compression wood and the histology of redwood bark.

956 PERSON, HUBERT L. 1939. Problem Analysis for Silvicultural Investigations in the Redwood Region. U.S. Forest Serv. Calif. Forest and Range Expt. Sta., Berkeley. 23 p. Processed.

An analysis and outline of the areas needed for study include "cutting methods (especially selective cutting), logging methods and damage, and slash disposal as they affect regeneration and growth." Ecological studies and stand improvement measures are also considered.

957 PERSON, HUBERT L. 1938. Selective Logging in the Redwood Region. *Timberman.* 39:32. April 1938.

Brief note on the planting program after clear cutting in 1922, and the change in 1934 to selective cutting with natural reproduction. Description of the Henry Creek experimental stand cruised at 177,000 bd. ft. per acre, of which 143,000 was redwood. Approximately 80,000 bd. ft. per acre were cut in redwoods over 36 inches d.b.h. A check of the area after logging showed the average left to be 43,500 bd. ft. per acre of which 35,400 was redwood.

958 SAN MATEO COUNTY. BOARD OF SUPERVISORS. 1937. An Ordinance Setting Forth Specific Rules of Forest Practice in Cutting Timber. . . . Board of Supervisors, San Mateo County. Aug. 24, 1937.

An ordinance designed to prevent repetition of the fires of 1936 and to leave forest lands in better condition for regrowth.

959 SHERRARD, T. H. 1900. Forest Work on the Pacific Slope. *The Forester* [*Amer. Forests*]. 6:20. Jan. 1900.

Survey of red fir and redwood forests to investigate rate of growth.

960 SHOW, S. B. 1932. Timber Growing and Logging Practice in the Coast Redwood Region of California. U.S. Dept. Agr., Wash., D.C. Tech. Bul. 283. 22 p. Illus.

Outlines the characteristics of the region and the forests. For growing full crops of timber, planting and selective cutting are possible solutions, and "it appears true that slight modifications in cutting practice, in yarding and in slash burning, can be made to save the seed trees needed to supplement redwood sprouts and to obtain mixed stands of second growth . . . [and] fire protection on cutover lands is required." List of literature cited.

961 SMITH, ANTHONY WAYNE, and SELWYN J. SHARP. 1952. American Forests Forum: Our Readers Say. *Amer. Forests.* 58 (2) : 2. July/Aug. 1952.

Interchange of correspondence between the authors. Smith accuses the redwood industry of overcutting and opposing selective cutting; Sharp replies that selective cutting is not only accepted but is standard practice.

962 STÄHELIN, RUDOLPH. 1936. Über den Aufbau der Urwälder Kaliforniens. *Schweizerischen Zeitschrift für Forstwesen,* nr. 9. Buchdruckerei Büchler & Co., Bern, Switzerland. 11 p. Illus., tables. [In German.]

A general description with some heretofore unpublished tables and graphs showing distribution of diameter classes and volume in virgin redwood forests. In German. The author was a member of the California Forest & Range Expt. Sta., Berkeley, Calif.

963 WESTVELD, RUTHFORD H. 1949. Applied Silviculture in the United States, 2d ed. John Wiley & Sons, Inc., New York. 590 p. Illus., index.

Chapter 17, the "Redwood Region," p. 537-551, has brief sections on physiography, climate, lumbering practices, cutting and planting, regeneration, utilization and marketing problems, growth and rotation, slash disposal, disease and insect problems, logging damage control. List of references at end of chapter.

SILVICULTURE (Young-Growth)

964 ANON. 1923. California Redwood Association Adopts Plan of Reforestation. *Calif. Lumber Merchant.* 1(19):47. April 1, 1923.

Young redwoods to be planted in selected areas between Monterey County and the Oregon line.

965 ANON. 1951. Management of Second Growth Redwood. *Timberman.* 52:54-55, 94. April 1951. Illus.

For continuous raw material supply for hardboard, for the Masonite Corp., Ukiah, Calif.

966 ANON. 1927. Plant Redwood Seedlings. *Timberman.* 28:106. Jan. 1927.

Pacific Lumber Co. planting redwood on cutover lands.

967 ANON. 1922. Planting Experiments on Redwood Cutover Lands. *Amer. Forestry* [*Amer. Forests*]. 28:191-192. March 1922.

Brief note on the artificial reforestation in Mendocino County with species other than redwood, by the Forestry Division of the Univ. of Calif. In cooperation with the Union Lumber Co.

968 ANON. (George Craig.) 1954. Putting a Redwood Burn Back Into Production. *Timberman.* 55:72, 74. March 1954. Illus.

Description of the effort to rehabilitate Hammond Lumber Company's Maple Creek burns of 1936 and 1945.

969 ANON. 1932. [Redwood Planting Data.] *Forest Worker.* 8:9. March 1932.

Brief note that "6,365,000 trees have been planted on 25,500 acres at a cost of $225,000. The costs averaged $10.50 per acre for Mendocino and $7.32 per acre for Humboldt" with a survival of about 47%.

970 ANON. 1926. Redwood Seed for New Zealand. *Timberman.* 27:158. Oct. 1926.

Order of 1750 pounds for Selwyn Co.

971 ANON. 1922. Reforestation Experiments on Redwood Cut-over Land. *Australian Forestry J.* [Sydney]. 5(7):197. July 1922.

972 ANON. 1926. Saving of Redwoods. *Outlook* [*New Outlook*]. 143:86-87. May 19, 1926. Illus.

Brief article directing attention to the Humboldt Redwood Reforestation Assoc., and its members.

973 ANON. 1889. Second-growth of the Redwood. *The Arcata Union,* Arcata, Calif. 3(33):2. March 16, 1889.

Trees chopped down thirty-five years ago, will again grow; will equal in size and symmetry the original ones.

974 ANON. 1923. Senators Consider Reforestation in West. *Amer. Lumberman.* 2522:56. Sept. 15, 1923.

News item on the reforestation plan of the redwood industry.

975 ANON. 1924. Union Lumber Company Completes Big Planting Job. *West Coast Lumberman* [*Lumberman*]. 46:46. Apr. 1, 1924.

Five hundred fifty acres replanted with young trees.

976 BAER, HERBERT. 1955. 1945 Burn Reforestation Project. *Redwood Log,* Hammond Lumber Co., Samoa, Calif. 8:1-2. Jan. 1955. Illus.

Brief description of the planting of 290 acres of burned land with redwood and Douglas fir.

977 BARNES, JOHN S. 1924. Redwood Growth Studies. [Berkeley, Calif.] 65 p. Tables. Processed.

Thesis (M.S.) — Univ. of Calif. May 1924.

Part 1: The relative volume production of sprouts and seedlings in second growth (also published in *Timberman,* 26:146, 148, Jan. 1925); Part 2: The height growth of young redwood in mixture; Part 3: A site classification for virgin stands (also published in *Timberman,* 25:53, June 1924.)

978 BERRY, SWIFT. 1924. The Second Crop of Redwood — and What is Being Done to Secure It. *Timberman.* 25:54. March 1924. Illus.

Extract of article in *Lit. Digest,* p. 28-29, Aug. 2, 1924.

General article on nursery, field planting, and second-growth lumber.

979 BLACK, S. R. 1925. California's Newest Crop: The Redwood Tree. *Amer. Rev. of Rev.* 71:61-64. Jan. 1925. Illus.

An account of the program of planting as part of the sustained yield policy of the larger lumber companies following studies indicating that redwood forestry would be profitable. Illustrations are of nursery and planting.

980 CALIF. AGRICULTURAL EXPERIMENT STATION. 1922. Results of Forestry Investigations for the Year Ending June 30, 1922. Calif. Agr. Expt. Sta., Berkeley. 11 p. Illus. (Reprinted from the Report of the College of Agr. and the Agr. Expt. Sta. of the Univ. of Calif., from July 1, 1921 to June 30, 1922.)

Brief resumé of various experiments: germination and early growth of redwood; experimental plantation on redwood cutover land; yield of second-growth redwood.

See also same for 1923, 1924, 1925, 1926.

981 CORBITT, WILLIS G. 1923. Redwood Reforestation. *Timberman.* 24:175. Sept. 1923. Illus.

Letter to the editor from the Forest Engineer of the Pacific Lumber Co. telling of educational methods for reforestation.

982 CORBITT, WILLIS G. 1923. Reforestation in the Redwoods. *Timberman.* 25:110-114. Nov. 1923.

Includes material on cutting systems and fire prevention.

983 CUTTLE, FRANCIS. 1924. Reforestation or Ruin in America: Which Shall It Be? In *Chamber of Commerce of the U.S. Western Div. Second Mid-Year Meeting,* Los Angeles, Dec. 2 & 3, 1924. 6 p. Processed.

Address on reforestation delivered at the meeting. Discussion of the problem, including forest influences. Mention is made of the nursery and planting program in Humboldt County.

984 DOBIE, CHARLES C. 1924. Planting Lumber. *Overland Monthly.* 82:195-196. May 1924. Illus.

Popular article on the reforestation program of the Calif. Redwood Association.

985 FAIRBANKS, W. W. 1925. Replanting the Redwoods. *Southern Lumberman.* 121:177-178. Dec. 19, 1925. Illus.

Also reviewed in *Lit. Digest,* 88:21, Feb. 27, 1926, with title "Seeding California Redwoods for Future Forests." Tells of the formation of the Calif. Redwood Assoc., and a brief description of its reforestation program, including seed collection, nursery operation, and planting; some of the problems of establishing a new forest are pointed out.

986 FISHER, RICHARD T. 1903. A Study of the Redwood. In *The Redwood.* U.S. Forest Serv., Wash., D.C. Bul. 38. p. 3-28. Illus., tables.

"This study concerns itself with young second-growth redwood rather than with mature trees; with lumbered areas rather than with the virgin forest." Covers all phases to some extent: forest description, distribution, climate, silvicultural types, characteristics of tree and wood, enemies, associated species, lumbering and management. Tables are yield and growth data.

987 FOWELLS, H. A. 1946. Forest Tree Seed Collection Zones in California. U.S. Forest Serv. Calif. Forest and Range Expt. Sta., Berkeley. Sept. 13, 1946. 4 p. Map. Processed. (Its Research Note No. 51.)

Divides redwood into 2 zones: Northern Redwood and Southern Redwood with Cape Mendocino as the dividing line.

988 FRITZ, EMANUEL. 1923. Properties and Uses of Second-growth Redwood. Calif. Agr. Expt. Sta., Berkeley. Project 688. 117 p. Illus. Processed. (Copies located in the Project Files of the Univ. of Calif. School of Forestry, and the Agr. Expt. Sta., Berkeley; also in the libraries of the Pacific Lumber Co., Scotia, and the Union Lumber Co., Fort Bragg, Calif.)

Portions of the study appeared in the newspapers, the *Mendocino Beacon,* Mendocino, and the *Fort Bragg Advocate,* Fort Bragg, Calif., for the weeks of June 23 and June 30, 1923; also in *Timberman,* 24:170, July 1923, with title "Experimental Sawing of Second-growth Redwood."

Reports the cutting of a ¾-acre plot of 65-year-old second-growth redwood on Big River, Mendocino County, Calif.; its logging, stem analysis, sawing, yield and lumber grades. Includes also a similar study in Freshwater Creek, Humboldt County, Calif. Notes on accelerated growth following logging in old-growth and thinning (in Freshwater plot) of second-growth. The Big River plot produced at the rate of 80 M board feet per acre, mill tally. Profusely illustrated with tipped-in photographs.

989 FRITZ, EMANUEL. 1945. Regarding the Genesis of Redwood Trees. *Tank Talk* (Acme Tank Mfg. Co., Los Angeles). 2 p. Feb. 1945. Illus.

A popular account of reproduction by natural seeding in the virgin forest, primarily, with some material on cutting methods. (Originally a letter to the editor; title supplied by editor.)

990 FRITZ, EMANUEL. 1947. Second Growth Redwood Worthy of Good Management Practices to Obtain Perpetual Income. [Reprinted from] *Calif. Agr.* Vol. 1. 3 p. May 1947.

Also in *Humboldt Standard* [newspaper], Eureka, Calif., Aug. 3, 1946, p. 8.

991 FRITZ, EMANUEL. 1950. Some Principles Governing the Growing of Redwood Crops. *Western Forestry and Conserv. Assoc. Proc.* 41:23-25. Dec. 6, 1950.

Also in *Redwood Region Logging Conf. Bul.*, May 1951, p. 3-4, 18-19; *J. Forestry*, 49:263-266, April 1951.

A concise summary of management principles and recommendations for virgin old growth stands, second growth stands, brush fields dotted with redwood sprout clumps, and current clear cuttings. The discussion includes logging practices, slash disposal problems, methods for restoring full production, thinning, protection, seeding, and the use of tractors.

992 FRITZ, EMANUEL. 1950. Spotwise Direct Seeding of Redwood. *J. Forestry*. 48:334-338. May 1950.

Condensed in *Calif. Agr.*, 12:5, 13, Dec. 1950, illus.

Gives the results of direct seeding experiments from 1935-1946. (Note: Copy containing individual field plot descriptions and data is in the Forestry Library, Univ. of Calif., 42 p., tables.)

993 FRITZ, EMANUEL. 1945. Status and Management of Second-growth Timber in California. *Western Forestry and Conservation Assoc. Proc.* 36:12-15.

Paper on the area, volume, and condition of older second-growth redwood (and including pine) which originated from animal and light donkey-engine logging, and are predominantly equal in age, about 50 to 90 years.

994 FRITZ, EMANUEL. 1954. Tree Growing by the California Redwood Industry. [Address before Amer. Forestry Assoc., 79th Annual Convention, Portland, Ore.] Sept. 6, 1954. 4 p. Processed.

Outline of the reforestation program.

995 FRITZ, EMANUEL. 1945. Twenty Years' Growth on a Redwood Sample Plot. [Reprinted from] *J. Forestry*. 43:30-36. Jan. 1945. Tables.

Gives data on the growth on a one-acre plot of 85-year-old redwood on Big River, Mendocino County, showing a yield of 223,000 board feet.

996 FRITZ, EMANUEL. 1951. Yield of Second-Growth Redwood. *Noyo Chief*, Union Lumber Co., Fort Bragg, Calif. p. 10-11. "Tree Farm Issue," May 19, 1951. Illus.

General description of second-growth yields.

997 GEIGER, C. W. 1926. Propagation of Redwood Seedlings. *Timberman*. 27:176. May 1926.

Method of collecting the seed and preparing the seed beds, and the first shipment of seedlings to Atlantic coast.

998 GERHARDY, CARL O. 1927. The Man-made Forest. *Calif. Lumber Merchant*. 5:18, 20, 22, 24, 26. March 15, 1927. Illus.

Article dealing with the status, development and capacity of the nursery and reforestation program in the redwood region, with particular reference to the Union Lumber Company's program. Includes discussion of the problems involved, and the possibilities of success.

999 GIBBS, WILLIAM H. 1931. Redwood Reforestation by the Caspar Lumber Company, Caspar, California. n.p. March 1931. 11 p. Tables. Processed.

Description and history of the company's reforestation program from 1923 to 1930 by the Forester for the company. Tables give cost of planting and survival data.

1000 HALL, S. J. 1950. Regenerated Redwood; Its Possibilities Attract Former Southern Forester. *Southern Lumber J.* 54 (ser. 2):26, 92. Nov. 1950. Illus.

Observations by the author encouraging investments in second-growth redwood stands.

1001 HILL, ARTHUR W. 1927. The Redwoods of California and Methods of Afforestation. *Empire Forestry J.* [London]. 6(1):21-24. Illus.

Brief description of the tree and forest, the resistance to decay and ability to sprout, and the seeding and planting program of the Pacific Lumber Co. in Humboldt County.

1002 HUMBOLDT REDWOOD REFORESTATION ASSOC. 1924. The Redwood Reforester. Humboldt Redwood Reforestation Assoc., Samoa, Calif. Vol. 1-2(1). Dec. 1924/Feb. 1926. Illus.

Five issues only, no more published; first four issues, 4 p. each; final issue, 29 p. First issue published at Eureka, Calif. The series describes the work and progress of the Association, including seed gathering, care of seedlings, planting, and nursery practices. The final issue also reviews past logging methods in relation to present second growth and outlines the objectives of the Association.

1003 HUTCHINSON, WALLACE. 1925. Long Live King Sequoia! *Nature Mag.* 6:174-178. Sept. 1925. Illus.

Primarily on the reforestation project started about 1921 by the redwood lumber companies. Photographs of nursery, planting, and a 20-30 year old second-growth forest.

1004 LEOPOLD, ALDO. 1929. Second-growth Seedling Redwoods. *J. of Forestry.* 27:798. Oct. 1929.

Comparison of two trees three feet apart, of same age, yet of varying diameters on Big River, Mendocino Co.

1005 LULL, G. B. 1909. State's Attitude Toward Reforestation. *Commonwealth Club of Calif., Trans.* 4(2): 70-71. April 1909.

A report to the Commonwealth Club about the extent of forested area in California. Nearly half, or 16,000,000 acres bears merchantable timber and it is estimated that between 15,000,000 and 20,000,000 acres of forest land in California are privately owned.

1006 MacLEAN, ROBERT. 1949. District I Collects 90 Pounds of Redwood Seed. Calif. Dept. of Natural Resources. Div. of Forestry. *News Letter.* 8:8-9. Jan. 1949. Processed.

Brief note stating that 719½ lbs. of green cones yielded 90 lbs. of clean dry seed.

1007 McNAB, JAMES. 1875. On Pruning the Redwood. *The Garden* [London]. 7:23-24. Jan. 9, 1875.

Cutting-made plants are stated to be more common than seedlings; the author feels that judicious pruning at any age appears to do the tree no harm and improves the form.

1008 MASON, DAVID T. 1924. Before and After Taking. *Amer. Forests.* 30:214-215. April 1924. Illus.

The title refers to logging on redwood lands, and the subsequent recovery by reproduction as illustrated in two photographs: the first picture shows a redwood logging operation in progress in 1888, the second picture made in 1923 shows how the same area looked in that year with new growth. (Bear Gulch, Humboldt Co.)

1009 MASON, DAVID T. 1923. California's Forest and Problems. *Commonwealth Club of Calif., Trans.* 18(4):178-180.

Attitude of redwood lumberman toward reforestation.

1010 MERRIAM, JOHN C. 1924. Scientific Research to Aid Redwood Reforestation. *J. Forestry.* 22:803-805. Nov. 1924.

Outline of the Save-the-Redwoods League to support research.

1011 MERRILL, A. H. 1949. Planting and Seeding Project; Big Lagoon Block, Hammond Lumber Co., Samoa, Calif. Report prepared by the Hammond Lumber Co. for presentation to Calif. State Board of Forestry meeting Sept. 7, 1949. ? p. (Copy located in library of the Hammond Lumber Co., Samoa, Calif.)

Report on the experimental seeding and planting.

1012 METCALF, WOODBRIDGE. 1924. Artificial Reproduction of Redwood. *J. Forestry.* 22:873-893. Dec. 1924. Tables.

Article states that redwood is the fastest growing conifer, and only 10% of the cutover land can be used for agriculture, "growing redwood is therefore a good business." Sprout reproduction is not adequate for full, even stocking. The major portion of the article contains information on seed collection and extraction: time to collect, cones per pound, amount of seed, viability; rules for sowing to obtain proper seed bed density; season to sow seed; losses to expect in transplanting; estimated survival of planted seedlings. Growth after establishment is good. Mixed planting may aid redwood on exposed sites. Considerable data on seed reproduction.

1013 PAUL, BENSON H. 1930. The Application of Silviculture in Controlling the Specific Gravity of Wood. U.S. Dept. Agr., Wash., D.C. Tech. Bul. 168. 20 p. Illus., tables.

Second growth redwood one of the conifers investigated. Results show that the density of the stand influences the specific gravity and the strength of the wood, and also the spring-wood/summer-wood ratio. Illustrations compare growth, but not of redwood. List of literature cited.

1014 PAUL, BENSON H., and RONALD F. LUXFORD. 1928. Relation of Growing Space to Specific Gravity and Strength of Second Growth Redwood. *West Coast Lumberman* [*Lumberman*]. 54:17, 32. June 15, 1928. Illus.

Study shows that closely grown second-growth is heavier and stronger than openly grown stands on the same site. Silvicultural suggestions are made: close spacing at first will result in better grade wood; a thinning is necessary later to produce maximum growth rate.

1015 PEED, W. W. 1924. Reforestation in the Redwood District. In *Chamber of Commerce of the U.S. Western Div. Second Mid-Year Meeting.* Los Angeles. Dec. 2 & 3, 1924. 5 p. Processed.

Address at the meeting by the president of the Humboldt Redwood Reforestation Assoc. Discussion of the factors which led to the adoption of a policy of reforestation by 70% of the operating companies, and the remaining problems, particularly public education for fire prevention.

1016 PERSON, HUBERT L. 1937. Commercial Planting on Redwood Cutover Lands. U.S. Dept. of Agr., Wash., D.C. Circ. No. 434. 39 p. Illus., tables, map.

A report on a study of the survival and development of planted nursery stock set out under the extensive planting program of the redwood lumber companies between 1922 and 1932.

1017 PERSON, HUBERT L., and WILLIAM HALLIN. 1942. Natural Restocking of Redwood Cutover Lands. [Reprinted from] *J. Forestry.* 40:683-688. Sept. 1942. Tables.

Reports mainly on reproduction on lands cut between 1920 and 1934, including the influence of seed trees, selective logging, slash disposal, seedling survival.

1018 RHODES, GEORGE H. 1923. Perpetuating the Redwoods. *Amer. Forests.* 29:147-152. March 1923. Illus.

Reforestation methods and programs described.

1019 SCHOFIELD, W. R. 1929. Reforestation in the Humboldt Redwood Belt. *J. Forestry.* 27:168-175. Feb. 1929. Tables.

Article tells of the founding, objectives, and accomplishments of the Humboldt Redwood Reforestation Assoc. Discussion of the broadcast seeding experiment, causes of the loss of seedlings, and logging methods. Tables give production record 1923-1928 of the Scotia nursery, the planting record, and the survival record, 1925-1928; another table gives the costs of growing timber.

1020 SCHUBERT, GILBERT H. 1952. Germination of Various Coniferous Seeds After Cold Storage. U.S. Forest Serv. Calif. Forest & Range Expt. Sta. Research Note No. 83. 7 p. Processed.

Includes small lots of Coast and Sierra redwood seeds, but data appears to be incomplete.

1021 TILLEY, WALKER B. 1927. Reforestation in the Redwood Empire. *Purchasing Agent's Bul.* [*Pacific Purchasor*]. 9:30-36. Aug. 1927. Illus.

The author was forest engineer for the Albion Lumber Co. at the time of this article. He outlines the planting program of the lumber industry.

1022 U.S. FOREST SERVICE. CALIF. FOREST AND RANGE EXPERIMENT STATION. 1949. Summary of Forest Planting in California. [Berkeley, Calif.] 12 p. Tables. Processed.

Reviews results of planting in the redwood region (1922-1932), p. 1-4, and in the pine region (1930-1941), p. 4-11.

1023 WAMBOLD, LLOYD D. 1948. Technical Problems of Growing the New Redwood Forest. In *Western Forestry & Conserv. Assoc. Proc.* 39:33-35. Dec. 1948.

Problems concerning reproduction, slash disposal, residual trees, and selective logging. Comments by E. Fritz, p. 35.

1024 WINTERS, ROBERT K., ed. 1950. Fifty Years of Forestry in the U.S.A. Soc. of Amer. Foresters, Wash., D.C. 385 p. Illus., index.

Contains 19 chapters by various noted men in the field, dealing with silviculture, management, utilization, influences, ecology, industrial forestry, etc. Specific reference to the planting program in the redwood region, p. 252.

1025 WOEHLKE, WALTER. 1922. Real Forestry at Last. *Sunset.* 48:16-19. April 1922. Illus.

Popular but concise outline of the planting program in the redwood region as developed by D. T. Mason.

MENSURATION

1026 ANON. 1949. Future Timber Resources. *Redwood Log*, Hammond Lumber Co., Samoa, Calif. 2:1-2. Oct. 1949. Illus.

Describes the cruise being made of the Company's cutover lands to investigate the possibility of continuous production.

1027 BARNES, JOHN S. 1925. Relative Volume Production of Redwood Sprouts and Seedlings. *Timberman.* 26:146, 148. Jan. 1925. Tables.

A study of the growth made by redwood second growth with emphasis on variation in production of sprouts and seedlings. Includes computation of correction factors to apply to the "Preliminary Yield Tables for Second-Growth Redwood."

1028 BARNUM, CHARLES R. 1944. Redwood Cruisers' Marks. *Timberman.* 45:18-19. Illus.

Describes and illustrates marks used by timber cruisers in the redwood region, including both current and historical.

1029 BRUCE, DONALD. 1923. Preliminary Yield Tables for Second-growth Redwood. Calif. Univ. Agr. Expt. Sta. Bul. 361. May 1923. p. 425-467. Tables.

Yield tables for sites I, II, III, normal yield, ages 20 to 60 years by 5 year increments, the volume and average annual growth in cubic feet and in board feet. Includes discussion of the relation between height of the associated species and of redwood, the effect of variations in composition on yield; and the detailed plot data on which the tables are based is given.

(Note: See also John S. Barnes, 1925, Relative Volume Production of Redwood Sprouts and Seedlings.)

1030 BRUCE, DONALD. 1922. Volume Tables for Second-growth Redwood. *Timberman.* 23:90. June 1922. Tables.

Also in *Calif. Agr. Expt. Sta.*, Bul. 334, Oct. 1921, p. 235-237, with title "Preliminary Volume Tables for Second Growth Redwood."

Two volume tables are presented: 1. "based on merchantable height to 5 inches in the top, was prepared by frustum form factor method; 2. based on total height, was derived from the first by means of a study of the average length of top above 5 inches from trees of various heights and diameters."

1031 BRUCE, DONALD, and FRANCIS X. SCHUMACHER. 1925. Revised Volume Tables for Second-growth Redwood. *J. Forestry.* 23:148-155. Feb. 1925. Tables.

Three volume tables, based on total height, were constructed because the existing tables did not take in the range of values encountered in many second growth stands.

1032 ELAM, A. W. 1913. Volume Table for Redwood. Pub. by H. K. Starkweather, Alameda, Calif. n.p. Tables.

A pocket-size book of tables giving volumes of redwood trees for diameter, number of logs and taper.

1033 FORBES, R. D. 1928. The Nordic Philosophy Invades Forestry. *J. Forestry.* 26:500-506. April 1928. Tables.

A reply to the conclusion of Woodward (see his "Where Can Timber Be Grown Commercially in the United States?", 1928) that "the South is not 'worth considering' as a region for commercial timber growing." Tables showing comparative yields indicate that redwood ranks highest for the sites and ages considered.

1034 FRITZ, EMANUEL. 1939. Volume Table for Old-growth Redwood. *Timberman.* 40:38-39. Aug. 1939. Table.

Based on 546 trees cut in Humboldt County and on diameters from 14 inches to 96 inches measured inside the bark, 20 feet from the ground line.

1035 HALLIN, WILLIAM. 1941. Volume and Taper Tables for Old-growth Coastal Redwood. U.S. Forest Serv., Calif. Forest and Range Expt. Sta., Berkeley. March 10, 1941. 79 p. Tables. Processed.

Condensed in *J. Forestry,* 41:681-682, Sept. 1943, and with an addendum by F. X. Schumacher.

1036 HASEL, A. A. 1950. Board-foot and Cubic-foot Volume Tables for Second-growth Redwood. U.S. Forest Serv. Calif. Forest and Range Expt. Sta., Berkeley. Forest Research Notes No. 66. Feb. 6, 1950. 14 p. Tables. Processed.

Volume tables revised to include larger diameters and a broader tree representation. Based on form factors. Volumes are in Scribner Decimal C and cubic feet.

1037 HENDERSON, H. S. 1917. Computing the Volume of Standing Redwood. *Timberman.* 19:38. Dec. 1917.

Method used.

1038 MILLER, H. P. 1924. Topographic Mapping in the Redwood Region. *Forest Club Q.*, Univ. of Wash., Seattle. 3:5-17. Nov. 1924. Illus., table.

The method used by The Pacific Lumber Co., Scotia, Calif., on its holdings. Mapped to 20-ft. contour interval and with an accuracy possible for subdivision purposes. Costs have averaged $0.70 to $1.70 per acre.

1039 MUNNS, E. N., and R. M. BROWN, comp. 1925. Volume Tables for the Important Timber Trees of the United States: Western Species. U.S. Forest Serv., Wash., D.C. 159 p. Tables.

Contains volume tables for second-growth, including those of Bruce and Schumacher (1924) and Fisher (1900), and a table for old growth by Henderson (1916).

1040 PEMBERTON, JAMES E. 1924. The Relation of Bark to Diameter and Volume in Redwood. *J. Forestry*. 22:44-48. Jan. 1924. Tables.

The relation between d.b.h. and bark thickness is practically constant for any group of trees. The ratio is about 15 per cent for trees under 100 years old, and the percentage is lowered to about 13 per cent in the case of virgin timber; the ratio decreases at a fairly regular rate at higher points on the tree. The bark volume is 27 per cent of the total volume of the bole, or 37 per cent of the wood volume (in cubic feet) figured from the ground to the tip.

1041 PRATT, WILLARD E. 1952. Diameter Distribution of Redwood Logs. Calif. Redwood Assoc., Redwood Research Rpts. Research Project 1.20121-A. [5] p. Tables. Processed.

Diameter distribution, in terms of percentage of total log volume produced, for 4 areas of the redwood region.

1042 SCHUMACHER, FRANCIS X. 1926. The Stem Form and Form Quotient of Second-growth Redwood. *J. Forestry*. 24:190-201. Feb. 1926. Tables, biblio.

Second growth redwood compared in the matter of stem form to the equations of Höjer and Behre. Data from 1000 stem analyses by U.S.F.S. in Del Norte and Humboldt counties in 1899, and 125 stem analyses by the Div. of Forestry, Univ. of Calif., in Mendocino County in 1923. Results show volume tables based on diameter, height and form, as expressed by a stem-form equation, should fit second-growth redwood stands when correction factors for bark thickness and root-swelling are applied; the Behre equation expresses the form of redwood better; normal form quotient of individual trees increases with stand density, but is independent of other factors of growth.

1043 SCHUMACHER, FRANCIS X. 1930. Yield, Stand, and Volume Tables. Univ. of Calif. Col. of Agr., Agr. Expt. Sta., Berkeley. April 1930. 41 p. Illus., tables. Bul. 491.

While not pertaining to redwood, it reports on the Douglas fir stands in the redwood belt.

1044 TUCKER, J. H. 1909. Volume Table for Redwood. J. D. Lacey & Co., Portland, Ore. 18 p.

Subtitle: Scale: 16 ft. logs, 18 to 144 inches diameter; taper 2 to 18 inches.

1045 WOODWARD, K. W. 1928. Where Can Timber Be Grown Commercially in the United States? *J. Forestry*. 26:5-11. Jan. 1928. Tables, biblio.

The author attacks the opinion that the South grows timber well, both because of the decreased fertility of soil and its inability to retain moisture. He presents some yield data and concludes that "only the following forest regions are worth considering from the standpoint of rapid timber production: redwood, Douglas fir, eastern white pine (except the western margin where rainfall is deficient), beech-birch-maple, western white pine, and cypress-hardwoods (except the very wet back swamps)." Redwood ranks first in a table giving yields per acre per annum, and second in a table of yields in 50 years. (See also Forbes, 1928, "The Nordic Philosophy Invades Forestry.")

PROTECTION: CONTROL OF DESTRUCTIVE AGENCIES

Fire

1046 ANON. 1937. Fighting Fire with Tractor and Bulldozer. *Timberman*. 38:18-19. Sept. 1937. Illus.

Slash burning fires which get out of hand.

1047 ANON. 1899. Forest Fires. *The Forester* [*Amer. Forests*]. 5:259. Nov. 1899.

Fires on the slope of Mt. Tamalpais and in the Santa Cruz mountains. Fire fighters were inadequate and the lack of water was a hindrance, etc.

1048 ANON. 1903. Forest Fires in July. *Forestry and Irrigation* [*Amer. Forests*]. 9:412-413. Aug. 1903.

One of a series of monthly news reports on forest fires in the entire country; the section on California gives for this month fires in Santa Cruz and Mendocino counties.

1049 ANON. 1949. Humboldt-Del Norte Cooperative Air Patrol. *Redwood Region Logging Conf. Bul.* Brizard-Matthews Machinery Co., Eureka, Calif. p. 11.

Airplane patrol during the fire season.

1050 ANON. 1915. Protecting Redwoods. *Amer. Forestry* [*Amer. Forests*]. 21:929. Sept. 1915.

Brief note on the work done by the local redwood protective associations.

1051 ANON. (Stuart Leete.) 1939. Ready for the 1939 Fire Season. *West Coast Lumberman* [*Lumberman*]. 66:21, 23. May 1939. Illus.

A description of the Hammond Redwood Company's forest fire organization and equipment.

1052 ANON. 1919. Standing Redwoods Burn. *Timberman.* 20:103. Jan. 1919.

Most destructive forest fire of 1918 was in redwood and tanbark section of Humboldt Co.

1053 ANON. 1907. A System for Fire Prevention in a Redwood Forest. *Forest Quarterly* [*J. of Forestry*]. 5:80. March 1907.

Also included in this issue are: Redwood production California, p. 111; and Report on lumbering and market study, p. 118.

1054 ARMENT, CHARLES ROSS. 1937. Fire Management in the Redwood Region. Term paper for Forestry 199, Univ. of Calif., Berkeley. May 1937. 22 p. Processed.

An attempt by a senior forestry student to assemble material on fire problems in the redwood region, and to evaluate the opinions, findings, and studies of the various authors. List of literature cited.

1055 BARRETT, LOUIS A. 1935. A Record of Forest and Field Fires in California. . . . U.S. Forest Serv.? San Francisco. 171 p. Illus., biblio. Processed [Also on film].

Complete title ". . . from the Days of the Early Explorers to the Creation of the Forest Reserves." "This record includes the data compiled from newspaper files by T. C. West, and extracts from old boundary files, diaries of the early day explorers and pioneers and from California historical works compiled by me."

1056 CALIF. DEPT. OF NATURAL RESOURCES. DIV. OF FORESTRY. 1905+. Forest and Fire Laws. Sacramento, Calif. v.p.

Issued by the Calif. State Board of Forestry, 1905-1927; from 1931 on, by the Div. of Forestry. Includes Trespass Penal Code (384a) regarding destruction of trees, shrubs, etc. The 1940 edition contains Forest Land Fire Patrols regulations, establishing criminal offenses and providing for fire patrols, exempting the redwood region from certain provisions (Pub. Res. C., Div. IV, Ch. 1, Art. 2, Sec. 4051-4060); these exemptions were repealed in 1941.

1057 CALIF. DEPT. OF NATURAL RESOURCES. DIV. OF FORESTRY. 1921+. Forest Fire Summary. . . . [Sacramento, Calif.] v.p. Processed.

Title varies. This is the narrative report for the state; contains references to fires in the north Coast region. Beginning in

1938, there is also a supplement of fire statistics.

1058 CALIF. REDWOOD ASSOC. 1937. Protection of Redwood Forests Against Fires. Calif. Redwood Assoc., San Francisco. [Mimeograph of June 9, 1937.] Processed.

Also in *West Coast Lumberman* [*Lumberman*], 64:38, July 1937, with title "Stringent Forest Fire Rules in the Redwoods" (by E. Fritz); and as letter to the editor by C. W. Bahr, President, Calif. Redwood Assoc., in *J. Forestry,* 35:891-893, Sept. 1937.

Gives the purposes and provisions of fire control policy of the Calif. Redwood Assoc. codified in May 1937, and accepted by the State Board of Forestry.

1059 CALIF. STATE BOARD OF FORESTRY. 1919. Fire Protection in the Redwoods. In *Seventh Bien. Rpt. of the State Forester.* State Printing Office, Sacramento. p. 43-44.

Replies (23) to a questionnaire regarding fire protection and methods of control, sent to operators manufacturing lumber or split stuff.

Also lumber production in 1917.

1060 CALIF. STATE BOARD OF FORESTRY. 1920. Proceedings at a Meeting of the Calif. State Board of Forestry and the Calif. Forestry Committee with the Lumbermen of the State. State Printing Office, Sacramento. [Nov. 5, 1920.] 27 p.

Also in *Calif. State Board of Forestry. Eighth Bien. Rpt. of the State Board of Forestry,* 1921, p. 12-31.

Report of a meeting concerning fire protection and prevention, the use of logged-off lands for the growing of new forests, and slash disposal. Proposed legislation discussed (Capper Bill) and the need for regulation of slash disposal. General agreement that the danger in the redwoods comes from the small split stuff operators rather than the large operators.

1061 FAIRBANK, C. W. 1953. Fire Control Administration Progress and Needs in the North Coast Area. Soc. Amer. Foresters. Northern Calif. Section. *Papers presented* Dec. 5, 1953. p. 22-24. Processed.

Stresses the importance of education as against force.

1062 FORBES, R. D. 1933. How to Stop Forest Devastation. In *A Natl. Plan for Amer. Forestry,* vol. 2. U.S. Forest Serv., Wash., D.C. p. 1429-1454.

Part of Senate Resolution 175 (72d Cong.), the Copeland Report. Contains the statement "The redwood type, largely because of the tremendous capacity of redwood to reproduce from sprouts, is very rarely devastated," p. 1443.

1063 FRITZ, EMANUEL. 1945. The 1945 Fire Season and Its Lessons. [Calif. Redwood Assoc., San Francisco.] 6 p. Processed.

A review of the big fires of 1945 in the redwood region, and what was wrong; with recommendations for future reduction of losses.

1064 FRITZ, EMANUEL. 1936. Redwood Forestry Program Jeopardized by Public Apathy Toward Fire. [Calif. Redwood Assoc., San Francisco.] 4 p. Processed.

Also in *J. Forestry,* 35:755-758, Aug. 1937.

Mimeographed "for presentation before the State Chamber of Commerce, Nov. 19, 1936." Calls attention to the lax enforcement of laws affecting incendiarism, and the fires, set by ranchers on neighboring land, which are allowed to burn uncontrolled.

1065 FRITZ, EMANUEL. 1931. The Role of Fire in the Redwood Region. *J. Forestry.* 29(6):939-950. Oct. 1931.

Also in *Calif. Agr. Expt. Sta.,* Circular 323, April 1932, 23 p., illus.

Gives a brief history of fire in the redwood region, its use by the Indians, and early practices of burning. Discusses the effect of fire on the growth and form of the tree, including hollow trees, "fire columns," heart rot, and "spike tops"; the effect of fire on the composition of the forest, sprouting, growth, and the loss of merchantable contents. Discussion of the general apathy towards fire in the redwood region, and the changing forestry practices in logging and burning.

See also a letter to the editor by William H. Wirt, supporting the article and outlining his experiences as Forest Engineer for the Pacific Lumber Co., in *J. Forestry*, 30:109-111, Jan. 1932.

1066 HALLIN, WILLIAM. 1936. Saving Reserve and Seed Trees from Redwood Slash Fires. *J. Forestry*. 34: 54-61. Jan. 1936. Table.

Four specific fires were studied and data concerning them presented. The severity of and the resulting damage from redwood slash fires is determined mainly by the interaction of 4 factors: moisture content of slash and litter, quantity and age of slash, wind, and degree of slope; these 4 factors are affected by 2 other important indirect factors: the aspect and number of trees left standing. Eight tentative recommendations for improved practice in slash fires are proposed.

1067 HERZIG, A. S. 1923. Fire Protection for the Redwoods. *Timberman*. 24:172, 175. Sept. 1923.

Article on the fire equipment, personnel, and methods of suppression at the Hammond Lumber Co. Discusses the advantages and disadvantages of burning before logging.

1068 HOXIE, GEORGE L. 1910. How Fire Helps Forestry. *Sunset*. 25: 145-151. Aug. 1910. Illus.

General article on the use of fire in forestry to reduce "extra" hazards, with specific reference to redwood on p. 149-150.

1069 HUMBOLDT TIMES. 1955. Foresters Study Problems of Fire Prevention, Make Recommendations. . . . Eureka Newspapers, Inc., Eureka, Calif. Nov. 20, 1955. p. 19.

Report on post fire season conference sponsored by the Redwood Region Conservation Council which was held in Eureka, Calif., Nov. 11, 1955. Topic of discussion was "The 1955 Fire Season, Causes and Effects."

1070 HUTCHEN, F. B. 1923. California's Forest Problems. *Commonwealth Club of Calif., Trans.* 18(4):186. July 1923.

Suggestions in reference to the fire hazard, which the author thinks is the most important thing of all.

1071 JEPSON, WILLIS L. 1909. Forestry in California. *Commonwealth Club of Calif., Trans.* 4(3): 76. April 1909.

Remarks by the author. Brief but historically important reference to the use of fire in the redwood belt, concluding that "logging without fire ought to be given at least a trial," with selective cutting.

1072 MERRILL, A. H. 1950. More Intensive Protection in the Redwood Region. *Western Forestry and Conserv. Assoc. Proc.* 41:57-58. Table.

Primarily fire protection, emphasizing increased use of aerial patrol. Table gives data on aerial patrol in Humboldt and Mendocino counties.

1073 METCALF, WOODBRIDGE. 1923. County Organization for Rural Fire Control. Calif. State Board of Forestry, State Printing Office, Sacramento. Circ. 7 (Part 2). p. 27-64.

Most of the circular is general; statement that Mendocino County timber owners have organized to keep fire out of forest lands for several years, and Humboldt County is similarly organized. State fire laws are given in the appendix, and three exceptions of the Redwood Region are given on p. 60-61.

1074 NELSON, DeWITT. 1951. Slash Disposal — California. *Western Forestry and Conserv. Assoc. Proc.* 42:40-41. Nov. 29, 1951.

A summation of slash disposal practices and problems in the redwood region as well as California as a whole.

1075 PRATT, MERRITT B. 1919. The Glory of the Redwoods Threatened by Fire. *Amer. Forestry* [*Amer. Forests*]. 25:1443-1445. Nov. 1919. Illus.

Popular account of the fire season of 1919.

1076 REYNOLDS, R. D. 1950. Fire Protection Law Enforcement Trends in California. *J. Forestry.* 48:696-699. Oct. 1950.

Based largely on the law enforcement philosophies of the State Division of Forestry in the redwood region.

1077 SAMPSON, ARTHUR W. 1944. Plant Succession on Burned Chaparral Lands in Northern California. Calif. Agr. Expt. Sta., Berkeley. Bul. 685. 144 p. Illus., tables.

Primarily on natural brush and grasslands, with references to the redwood region. Includes a section on the history of brush burning by the Indians, by stockmen, and of the State fire-control policies.

1078 SAMPSON, ARTHUR W., and L. T. BURCHAM. 1954. Costs and Returns of Controlled Brush Burning for Range Improvement in Northern California. Calif. Dept. of Nat. Res. Div. of Forestry. 41 p. Illus., tables.

Essentially an analysis of the costs of controlled brush burning under state permits (1945-1948) in the Coast Ranges and the Sierra Nevada. Contains information pertinent to the pine-fir-redwood range.

1079 SWALES, R. D. 1913. Protecting the Redwood from Fire. *Pioneer Western Lumberman.* 60:23. July 1, 1913.

Activities of an association formed for the purpose of giving fire protection to redwoods.

1080 SWALES, R. D. 1916. Protective Associations. In *Sixth Bien. Rpt. of the State Forester,* State Printing Office, Sacramento. p. 13.

Report of the Secretary of the Redwood Fire and Protective Assoc. (Note: Similar reports are included in various other Reports of the State Forester.)

1081 SWALES, R. D. 1913. Redwood Association Work. *Amer. Forestry* [*Amer. Forests*]. 19:748. Nov. 1913.

Brief report of the secretary of the Redwood Fire and Protective Assoc., for the year 1913.

1082 TILLEY, WALKER B. 1936. Fire Protection Organization for Redwood Operations. Calif. Redwood Assoc., San Francisco, March 7, 1936. 3 p. Processed.

Describes the fire protection organization of the Albion Lumber Co.

1083 WAMBOLD, LLOYD. 1949. Slash Disposal in Relation to the Future Crop. *In* R.R.L.C. Proc., May 1949. p. 15-19. Mimeo.

1084 WAY, DAVID S. 1953. Fire Prevention in the Redwood Region. Soc. Amer. Foresters. Northern Calif. Section. *Papers presented* Dec. 5, 1953. p. 15-18. Processed.

Recounts the past lack of protection; the rise of interest and activity in protection; and the responsibility and part played by the Redwood Region Conservation Council.

1085 ZINK, H. E. 1953. Presuppression Programs. Soc. Amer. Foresters. Northern Calif. Section. *Papers presented* Dec. 5, 1953. p. 18-21. Processed.

Gives the steps in setting up presuppression programs in the redwood region.

Insects

1086 CALIF. DEPT. OF AGR. 1914. The Citrus Mealy Bug. Monthly Bul. [Sacramento.] 3 (3): 111-112. March 1914.

Redwood is host plant.

1087 CALIF. DEPT. OF AGR. 1914. Redwood Mealy Bug. Monthly Bul. [Sacramento.] 3 (3): 121-122. March 1914.

This insect feeds only upon Sequoia sempervirens.

1088 COLEMAN, GEORGE A. 1901. The Redwood Mealy Bug. Calif. Acad. Sci. Proc. *Zoology*. 2 (ser. 3): 409-420. Illus.

This new species of mealy bug, *Dactylopius sequoiae*, was found by the author in Dec. 1899. The article describes the insect in its various stages together with its life history and habits, and parasites. A plate shows the insect, both male and female.

1089 DE LEON, DONALD. 1952. Insects Associated with Sequoia Sempervirens and Sequoia Gigantea in California. *Pan-Pacific Entomologist*. 23: 75-91. April 1952.

Descriptions and work of the insects. Coast redwood, p. 76-85.

1090 ESSIG, E. O. 1926. Insects of Western North America. Macmillan Co., New York. 1035 p. Illus., index.

Lists and describes various insects which have been found on redwood or are common to it; recommends redwood for grape stakes since it is rarely attacked by termites.

1091 ESSIG, EDWARD O. 1931. Note on the Redwood Scale. *Pan-Pacific Entomologist*. 8: 48.

Redwood scale, *Aonidia shastae* Coleman, found on Sierra redwood, and Ferris recorded it on Coast redwood "at times in great abundance, always on the leaves."

1092 GRAHAM, SAMUEL A. 1929. Principles of Forest Entomology. McGraw-Hill Book Co., New York. 339 p. Illus., biblio., index.

Sole reference to redwood, p. 239, as being resistant to termites.

1093 HOPKINS, A. D. 1903. Insect Enemies of the Redwood. In *The Redwood*. U.S. Forest Serv., Wash., D.C. Bul. 38. p. 32-40. Illus.

1094 KEEN, FREDERICK PAUL. 1952. Insect Enemies of Western Forests. U.S. Dept. of Agr., Wash., D.C. Misc. Pub. 273. 280 p. Illus., indices.

Contains a list of insects using Coast or Sierra redwood as host trees, and descriptions of these insects and their work. Two indices, one for host trees, one general.

1095 KOFOID, CHARLES A., and EARL E. BOWE. 1934. A Standard Biological Method of Testing the Termite Resistivity of Cellulose-containing Materials. In *Termite and Termite Control*, Univ. of Calif. Press, Berkeley. p. 487-513. Tables.

Tests on various woods, including several samples of redwood, to determine the resistivity to termite attack. Tables give data on behavior of termites in the samples of wood; one table giving the effect of redwood extractive on Protozoa in the intestine of termites.

1096 KOFOID, CHARLES A., and others. 1934. Termites and Termite Control. Univ. of Calif. Press, Berkeley. 734 p. Illus., biblio.

Reports on studies of the biology of termites, their activities, damage done and control measures. Redwood used in many of the tests.

1097 LINSLEY, E. GORTON. 1942. A New Species of Callidium from the Coast Redwood. *Pan-Pacific Entomologist.* 18:192.

Callidium sempervirens Linsley, on limbs.

1098 PERSON, HUBERT L. 1933. Redwood Has Few Insect Enemies. *Forest Worker.* p. 15-16. May 1933.

Brief note stating that there are no "so-called primary insects which attack this species seriously." A few insects of minor importance feed on the foliage, bark, or wood.

Disease

1099 BONAR, LEE. 1928. Studies on Some California Fungi. *Mycologia.* 20:292-297. Sept.-Oct. 1928.

Leucostoma sequoiae sp. nov. described from specimens found on dead twigs collected in Mill Valley, Calif., May 20, 1923, p. 295.

1100 BUCHANAN, THOMAS. 1937. Some Studies on Decay Organisms in Redwood with Special Emphasis on Laboratory Technique. [Univ. of Calif., Berkeley.] 21 p. Processed.

Study done as a term paper, primarily on laboratory techniques.

1101 D., W. H. 1853. Diseased Taxodiums. *Gardeners' Chronicle* [London]. 13:582. Sept. 10, 1853.

Correspondence telling of a mildew following a severe frost, as a result of which new foliage turns brown and dies.

1102 ESSIG, EDWARD O. 1919. New Hosts of Oak-root Fungus in Humboldt County. Calif. Dept. Agr. *Monthly Bul.* 8:79-80.

Fungus *Armillaria mellea* noted as "reproducing itself admirably on the old roots of the redwood trees, with which all stump land is copiously filled in that district."

1103 FARLOW, WILLIAM G. 1888. Host Index of the Fungi of the United States. Cambridge [Mass.?] 219 p. Index.

List of 42 fungal forms attacking redwood, on p. 170. (Note: See also his *Biblio. Index of North American Fungi,* 1905, which lists sources of reference for all fungi, including the forms attacking redwood.)

1104 FRITZ, EMANUEL, and LEE BONAR. 1931. The Brown Heart-rot of California Redwood. [Reprinted from] *J. Forestry.* 29:368-380. March 1931. Illus., biblio.

"The authors present hitherto unpublished observations on a fungus causing much damage to the heartwood of California redwood. They describe the work of the fungus and some commercial aspects of the rot, the infrequent occurrence of the sporophore, the discovery of the latter, and the classification of the fungus as a new species — *Poria sequoiae.*" Part 1, Notes on the development of the causal fungus, by E. Fritz; Part 2, The etiology of the causal fungus, by L. Bonar.

1105 HUBERT, ERNEST E. 1931. An Outline of Forest Pathology. John Wiley & Sons, Inc., New York. 543 p. Illus., index.

Redwood one of conifers reported with typical chlorosis, p. 125-127. Illustration showing collapse in kiln-dried redwood stock due to fungus, p. 451.

1106 KIMMEY, JAMES W., and PAUL C. LIGHTLE. 1955. Fungi Associated with Cull in Redwood. *Forest Science.* 1:104-110. June 1955. Illus., map, tables.

Of the 49 billion bd. ft., gross volume, of redwood, more than 11 billion, or about 23 per cent, is cull due to decay and associated defects. Two major types of decay: *Poria sequoiae* and *Poria albipellucida.* Other types were found but none causes appreciable decay. Authors were not able to identify the brown cubical rot in the bark. Fungi gain entrance through wounds, both basal and top. Found no evidence of rot entering at branch stubs. The authors believe that *P. albipellucida* prevalence in the northern part of the redwood belt is associated with the presence of western red cedar on which this fungus is common. They found no fruiting bodies. List of literature cited.

1107 SEAVER, FRED J. 1914. A Preliminary Study of the Genus Lamprospora. *Mycologia.* 6:5-34. Jan. 1914.

Fungus *Lamprospora gemma* said found on decaying foliage of Coast redwood.

1108 SMITH, CLAYTON O. 1935. Crown Gall on the Sequoia. *Phytopathology.* 25:439-440. April 1935. Illus.

Brief note stating that inoculations were made on both redwoods with crown gall organism from peach. There were positive results on Sierra redwood after 4 months, but negative on Coast redwood. The inoculations seem to suggest that redwoods are not immune from, but somewhat resistant to, the crown gall organism from peach.

1109 SPAULDING, PERLEY. 1956. Diseases of North American Forest Trees Planted Abroad. U.S. Dept. of Agr., Washington, D.C. 1956. 144 p. Agr. Handbook No. 100.

An annotated list of American forest trees planted outside the U.S. *Sequoia sempervirens* plantings are listed on p. 125, host index p. 43-49. *Fomes annosus* is the only disease reported, this in the British Isles.

1110 VON SCHRENK, HERMANN. 1903. The Brown Rot Disease of the Redwood. In *The Redwood.* U.S. Forest Serv., Wash., D.C. Bul. 38. p. 29-31. Illus.

1111 WAGENER, WILLIS W. 1934. An Outline of Tree Disease Problems in California. *Western Shade Tree Conf. Proc.* 1:14-21. April 26, 1934.

Mentions die-back which occurred in redwood and other species in 1930 following a delay in winter rains and in spite of good rains in January, p. 15.

Animals

1112 ANON. (Emanuel Fritz.) 1949. Bears Put Young Redwoods Through Strip-tease Act. *Redwood Region Logging Conf. Bul.*, Brizard-Matthews Machinery Co., Eureka, Calif. p. 4.

Stripping of bark from ground to top.

1113 ANON. 1890. The Redwood: The Woodpeckers, the Squirrels, and the Acorn. *Gardeners' Chronicle* [London]. 8 (ser. 3):332. Sept. 20, 1890.

Note concerning a block sawed for use as shingles which had a hole in it containing 20 acorns; the hole had been covered over for 120 years.

1114 CLAUSEN, VICTOR H. 1953. Bear Damage to Young-Growth Trees. Calif. Redwood Assoc. Redwood Research Rpts. Research Project 1.36123-B, -C. 4 p. Tables.

Also in *Bear Depredation*, Calif. Legislature, Assembly. Interim Committee on Agr. [Sacramento] 1954, p. 26-27. (Assembly Interim Comm. Rpts., 1953-1955, vol. 17, no. 1.)

Describes method of damage survey and analysis of results. Killed or damaged trees total 4.1 per cent. Damage to Douglas fir began in 1949. Annual rate of damage is increasing, but since trapping began, annual loss leveled off to 0.7 per cent. (Note: See also Fred A. Glover, 1952, Damage to Redwood Reproduction.)

1115 FISH, D. T. 1866. Taxodium Sempervirens and the Squirrels. *The Gardener's Chronicle* [London]. 26:413. May 5, 1866.

Squirrels tore off the outer bark in great quantities to reach the inner soft bark for nests.

1116 FRITZ, EMANUEL. 1951. Bear and Squirrel Damage to Young

Redwood. *J. Forestry*. 49:651-652. Sept. 1951.

Note on the stripping of young redwoods by black bears.

1117 FRITZ, EMANUEL. 1954. "Bear" Damage to Young Redwood Trees. In *Bear Depredation*, Calif. Legislature. Assembly. Interim Committee on Agr. [Sacramento.] p. 28-31. (Assembly Interim Comm. Rpts., 1953-1955, vol. 17, no. 1.)

1118 FRITZ, EMANUEL. 1937. Sapsuckers on Redwood. [Reprinted from] *The Condor*. 39:36-37. Jan.-Feb. 1937. Illus.

1119 FRITZ, EMANUEL. 1932. Squirrel Damage to Young Redwood Trees. *J. of Mammalogy*. 13:76. Feb. 1932.

1120 GLOVER, FRED A., and EDWARD E. HANSEN. 1952. Damage to Redwood Reproduction [by Black Bears]. Calif. Redwood Assoc. Redwood Research Rpts. Research Project 1.36123. 13 p. Illus., tables. Processed.

Also in *Bear Depredation*, Calif. Legislature. Assembly. Interim Committee on Agr. [Sacramento] 1954, p. 9-20. (Assembly Interim Comm. Rpts., 1953-1955, vol. 17, no. 1.)

(Note: See also Victor H. Clausen, 1953, Bear Damage to Young-Growth Trees.)

1121 HAMMOND LUMBER COMPANY. 1954. Bear Depredations in Young Timber Stands of Humboldt County. In *Bear Depredation*, Calif. Legislature. Assembly. Interim Committee on Agr. [Sacramento.] p. 22-26, 53-55. (Assembly Interim Comm. Rpts., 1953-1955, vol. 17, no. 1.)

Other Agencies

1122 JORDAN, DAVID STARR, ed. 1907. The California Earthquake of 1906. A. M. Robertson, San Francisco. 371 p. Illus., index.

Instances and photographs of redwoods snapped off or damaged by the earthquake, p. 72, 102, 273.

1123 MEINECKE, EMILIO PEPE. 1929. A Report Upon the Effect of Excessive Tourist Travel on the California Redwood Parks, by D. [E.] P. Meinecke, pathologist, U.S. Bur. Plant Industry. State Printing Office, Sacramento. 20 p.

Describes effect on soil and roots; gives recommendations in general, and for specific parks and trees.

LUMBERING. PROCESSING AND UTILIZATION OF FOREST PRODUCTS

LUMBER INDUSTRY *(General)*

1124 ANON. 1901. Along the Pacific Slope. *Amer. Lumberman*. 1376: 32-33. Oct. 5, 1901. Illus.

Redwood industry of Humboldt County; popular account. Includes material on Shingle Manufacturers' Association.

Under various captions, *Amer. Lumberman* has a regular section in each issue on redwood lumber and industry, which contains information on investment, shipping, markets, prices, and men in the industry.

1125 ANON. 1955. Comeback in the Woodlands. *Life*. 39:110-119. Oct. 31, 1955. Illus.

A photographic essay featuring lumbering, forestry and utilization. Color photos show the felling and blasting (for easier handling of logs) of a 16½-foot redwood on the Yager Creek property of Pacific Lumber Co. Also in color, a log deck which has historical value in showing current standards of utilization of redwood, Douglas fir, and white fir.

1126 ANON. 1926. Developing New Redwood Operation. *Timberman.* 27:79, 218, 220. May 1926.

Plans for new mill at Rockport, Calif., six new redwood parks, conditions in Australia and New Zealand considered favorable to redwood.

1127 ANON. 1892. Excelsior Redwood Co. *Pac. Coast Wood and Iron* [*Pioneer Western Lumberman*]. 17:120. March 1892.

Description of the Excelsior Redwood Co., its extent, mills, equipment and steamship lines. California redwood has been introduced by this company into England, France, Mexico, Hawaii, Australia, S. America, Central America, and British Columbia.

1128 ANON. 1891. A Memorial and Biographical History of Northern California. Lewis Publishing Co., Chicago.

Mendocino's redwood and towns of the lumber industry, p. 141, 158-159.

1129 ANON. 1943. Memory of C. R. Johnson Honored by Citizens of Fort Bragg. *Calif. Lumber Merchant.* 22:16-17, 20. Oct. 15, 1943. Illus.

News note on the dedication of a plaque and a section of a huge redwood tree to C. R. Johnson, founder and former head of the Union Lumber Co. Contains also extracts from dedicatory addresses by John L. McNab, Charles Mannon, Otis R. Johnson and Emanuel Fritz.

1130 ANON. 1892. Mendocino County. *Pac. Coast Wood and Iron* [*Pioneer Western Lumberman*]. 18:17. July 1892.

Description of the redwoods, mills, forests, and people.

1131 ANON. 1944. Redwood at War. *Business Week.* p. 83. July 15, 1944.

1132 ANON. 1925. Redwood Concern Enlarges Manufacturing Capacity. *Amer. Lumberman.* 2615:55. June 27, 1925. Illus.

News item on the enlargement of the Redwood Manufacturers Co. at Pittsburg, with a 50 per cent increase in mill capacity of the allied organization, the Caspar Lumber Co., which supplies the rough lumber.

1133 ANON. 1900. Redwood for Eastern Shipment. *Pac. Coast Wood and Iron* [*Pioneer Western Lumberman*]. 34:169-170. Nov. 1900. Illus.

Article on the milling and woods operations of the Pacific Lumber Co., Scotia, Humboldt County. Several half-tones of the operations.

1134 ANON. 1955. Redwood Harvest. *Pac. Logger.* 3:22-25; 14-15, 26; 20-21, 28-30. Oct./Dec. 1955. Illus.

Articles describe the logging and milling operations of the Hammond Lumber Company; photographs include plant and equipment.

1135 ANON. 1928. Redwood Logs to Louisiana. *Timberman.* 29:18. July 1928.

Propose to have logs towed through Panama Canal.

1136 ANON. 1900. Redwood Lumber and Shingles for the Eastern Markets. *Pac. Coast Wood and Iron* [*Pioneer Western Lumberman*]. 34:129-130. Oct. 1900. Illus.

Article on lumbering in Mendocino and Humboldt counties, with particular reference to the operation of the Albion Lumber Co. Several half-tones of the Albion mill and woods operations.

1137 ANON. 1928. Redwood Merger Hinted. *Timberman.* 29:54. Aug. 1928.

Jackson, Miss. and Bogalusa, La. companies may combine. See also 29:42, Sept. 1928; and 30:201, Jan. 1929.

1138 ANON. 1931. Redwoods Biggest Merger Consummated. *West Coast Lumberman* [*Lumberman*]. 58:23, 35. April 1931.

News note on the consolidation of the mill and timber holdings of the Hammond Lumber Co. and the Little River Redwood Co. in Humboldt County.

1139 ANON. 1901. In the Redwood's Realm. *Amer. Lumberman.* 1377-1445: v.p. Oct. 12, 1901-Jan. 31, 1903. Illus.

Title varies Oct. 12 to Nov. 9, 1901. The entire series "presented by the Redwood lumbermen and manufacturers" of California "to introduce to the lumber dealers and wood workers of the world that unique product of the forest" redwood. The series covers all phases of lumbering, including logging methods and milling, as well as products and finishing. The articles repeat themselves in many instances, and there is a quality of advertising to the whole series. Initially the articles cover three columns, later cut to two columns. The series contains much of historical interest, particularly as to methods and equipment, such as logging with ox-teams (Nov. 23, 1901). Illustrations cover all aspects and continue throughout the series.

1140 ANON. 1928. Southern Redwood Company Formed. *Timberman.* 29:42. Sept. 1928.

Finkbine-Guild Lumber Co., Jackson, Miss., and Great Southern Lumber Co., Bogalusa, La., merged.

1141 ANON. 1939. Transformed: Cinderella-like. *West Coast Lumberman* [*Lumberman*]. 66:16-17. March 1939. Illus.

Story of the reopening of the Rockport Redwood Co. operations at Rockport, Calif.

1142 ANON. 1893. The Yield of Redwood Timber. *Garden and Forest.* 6:36. Jan. 18, 1893.

Information regarding timber acreage in Humboldt and Mendocino counties, number of men employed in Humboldt and total cut of mills in Mendocino.

1143 ADAMS, WILLIAM. 1899. Machinery and Power Applications in the Lumber Industry. *Engineering Mag.* 16:587-598. Jan. 1899. Illus.

An account of logging along the Noyo River and of milling at Fort Bragg. Felling, yarding, and skidding, as practiced at that time, are given a detailed treatment.

1144 ANDREWS, RALPH W. 1954. "This Was Logging!" Selected Photographs of Darius Kinsey. Superior Pub. Co., Seattle, Wash. 157 p. Illus.

About 200 reproductions of outstanding photographs from the files of Darius Kinsey; most of the pictures are on Douglas fir, but the content would pertain to logging in the redwoods. All phases of lumbering are included, the explanatory text is well done, and the whole represents a good study of early methods and operations.

1145 ARMSTRONG, J. B. 1886. Sonoma County. In *(First) Bien. Rpt. of the Calif. State Bd. of Forestry, 1885-1886.* State Printing Office, Sacramento. p. 19.

Notes on the status of redwood in Sonoma County.

1146 ATWOOD, ALBERT W. 1925. Redwood Dividends. *Sat. Evening Post.* 197:10-11, 169-170, 173; 20, 161-162, 165-166, 171, 173. April 25/May 23, 1925. Illus.

The second part has the title "Redwood Investments." The articles were written for popular consumption, and are primarily a plea for preservation of the redwoods, particularly groves adjacent to the Redwood Highway. The author traces the forestry situation in general, including taxation, the problems of the industry itself and the communities dependent upon the industry, and reforestation. He states the case of the lumberman, both pro and con, in terms of both forest economics and recreation aspects.

1147 BANCROFT, HUBERT HOWE. 1900. The New Pacific. The Bancroft Co., New York. 738 p.

Brief reference to Coast and Sierra redwood, noting the possibility of export of the former, p. 398-399.

1148 BARR, PERCY M. 1942. Northern California Redwood Area Analysis. Natl. Resources Planning Board, [Wash., D.C.] Feb. 1942 (Prelim. rpt. prepared June 28, 1941.) 39 p. Map, tables. Processed.

A survey of the regional economy (of Del Norte, Humboldt and Mendocino counties) including employment pattern, conditions affecting employment and income, readjustments and programming. Tables cover most data, including forest and production statistics. List of references.

1149 BARTLETT COLLECTION, 1854-1938. MSS. in Eau Claire Public Library, Eau Claire, Wisconsin.

The collection includes letters, clippings, maps, pictures, business contracts, federal and state papers, log marks, stock certificates and records of the following companies: . . . Del Norte Company, California (1902-1909); . . .

1150 BERRY, SWIFT. 1911. Notes on Management of Redwood Lands. In *Soc. Amer. Foresters Proc.* 6: 104-107. May 1, 1911.

Very concise account of logging operations, based on observations of "the lands of largest lumber companies operating in Humboldt County." Includes salvaging for split-stuff after logging, discussion of breakage, damage by fire, and stump heights. Possibilities of cutover areas for agriculture or grazing purposes, or as forest land, is discussed.

1151 BETTS, H. S. 1939. Redwood. U.S. Forest Serv., Wash., D.C. 12 p. Table, map. Processed.

One of a series of multigraphs on American wood. General description of the tree, forest and wood, the industry, production, wood uses. List of references.

1152 BROWN, ENOS. 1902. A Redwood Lumber Plant. *Sci. Amer.* 87 (ser. 2): 70. Aug. 2, 1902. Illus.

Observations on redwood and lumbering with reference to the Pacific Lumber Co. at Scotia. Illustrations are on the cover.

1153 BRYANT, RALPH C. 1923. Logging; the Principles and General Methods of Operation in the United States. 2d ed., rev. John Wiley & Sons, New York. 556 p. Biblio., good index.

Textbook. Broad in scope, but covers redwood resource, man-hours required from tree to pond (1915 figures), saws, in addition to general operations. Bibliography is classified.

1154 CALIF. REDWOOD ASSOC. 1953. A History of the California Redwood Association. San Francisco, Calif. May 18, 1953. 2 p. (Its Mimeo. M-27; copy located in Library of the Calif. Redwood Assoc.)

Brief outline of the functions of the California Redwood Association.

1155 CALIF. REDWOOD ASSOC. 1949+. Redwood Research Reports. Calif. Redwood Assoc., San Francisco. 2 vols. Loose-leaf. Processed (in small part printed).

Contains reports on Association projects relating to lumber seasoning, sawmills, log grades, log breakdown, log characteristics, bear damage, derived products, etc.

1156 COX, JOHN H. 1937. Organization of the Lumber Industry in the Pacific Northwest, 1889-1914. MS. in University of California, Bancroft Library, Berkeley.

Ph.D. thesis, University of California.

1157 ELLIOTT, W. W., & Co. 1879. Santa Cruz, California. Wallace W. Elliott & Co., San Francisco.

Tells of the growth of the lumber business from early times; the redwood forests of the county; the use of the timber for building, fencing and other purposes; and the Big Trees of California, describing their heights, diameters, names, early methods of felling and the uses of the stumps of fallen trees.

1158 EUREKA CHAMBER OF COMMERCE. 1955. Lumber Mills in Humboldt County. Issued by the Eureka & Humboldt County Chambers of Commerce, Eureka, Calif., May 1955. 16 p. Processed.

Directory, giving names, addresses, type of product, date established, number of employees, and estimated daily output. Includes 228 lumber, shake and shingle, and planing mills in Humboldt County.

1159 FRITZ, EMANUEL. 1944. Changes in Utilization Practices in the California Redwood Region. *Timberman.* 45:59-62. Feb. 1944.

Address before the Pacific Logging Congress, Seattle, Wash., Jan. 20, 1944. The changes noted are in: increased use of "white woods," closer use of redwood, piling, breakage reduction, pulp wood, tan bark.

1160 GIBSON, JACKSON. 1954. The First [Locomotive in the Redwood Region]. *Fortnight.* 16:2. March 17, 1954. Illus.

Letter to the editor with a photograph of what is purported to be the first locomotive, with a vertical boiler, on the Arcata and Mad River Railroad founded in 1854.

1161 GREELEY, WILLIAM B. 1917. Some Public and Economic Aspects of the Lumber Industry. U. S. Dept. of Agr., Wash., D.C. 1917. Report No. 114 (Studies of the Lumber Industry, Part I). 100 p.

Occasional reference to redwood.

1162 GREELEY, WILLIAM B. 1923. Westward Ho of the Sawmill. *Sunset.* 50:56-58, 96-99. June 1923. Illus.

General account of the movement of lumbering, with brief references to redwood lumbering.

1163 HABIB, PHILIP CHARLES. 1952. Some Economic Aspects of the California Lumber Industry and Their Relation to Forest Use.

Thesis (Ph.D.) — University of Calif. 1952.

1164 HERGESHEIMER, JOSEPH. 1922. The Magnetic West: The High Virgins. *Sat. Evening Post.* 195:20-21, 62, 64, 69-70. Dec. 16, 1922. Illus.

Part six of a series of articles on the West; this part deals with lumbering in general, and logging operations of the past and of the time. The last two pages refer to the redwoods of Humboldt County, and the urgent necessity of saving representative stands.

1165 HOLMES EUREKA LUMBER CO. 1952? The H-E Story in Pictures. Holmes Eureka Lumber Co., Eureka, Calif. 32 p. Illus.

A brochure of photographs descriptive of the company's lumbering operations from the forest through the mill.

1166 HOLT, E. J. 1909. California, Its Products, Resources, Industries, and Attractions. Calif. Alaska-Yukon Exposition Commission, Sacramento, Calif.

Lumber industry of California, p. 106-114.

1167 HOTCHKISS, J. M. 1931. Redwood Lumber Industry. *Calif. J. of Development.* 21:25. Jan. 1931.

The manufacture of redwood lumber gives employment to 6,500 people, pays in state and county taxes more than one million dollars, and spends each year more than ten million dollars in California.

1168 IRVINE, LEIGH H. 1915. History of Humboldt County, California. Historic Record Co., Los Angeles.

Redwood forests, p. 33; History of the lumber industry, p. 109-121; Shipping redwood from Eureka, p. 134; Dyerville, p. 139; Preservation of the redwood forests, p. 146-147.

1169 THE KNAVE. 1942. From Jenner to Fort Ross. *Oakland Tribune* [Oakland, Calif.]. p. B-1. Jan. 11, 1942.

Brief historical note on the mill and logging railroad at Jenner, Calif., and the Redwood Lumber Company in the early 1900's.

1170 McMORRIS & GANS. 1876. How to Get Rich in California on the Output of Redwood Lumber and Forests. McMorris & Gans, San Francisco.

Lumber trade, p. 83-84; Production of lumber on the coast of California, p. 85; Statistics of the amount of redwood lumber milled and its uses, p. 85-87.

1171 MENDOCINO CO., CALIF. OFFICE OF CO. SUPT. OF SCHOOLS. 1940? Pacific Coast Redwoods, Logging and the Making of Lumber. . . . Office of Co. Supt. of Schools, Ukiah, Calif., 1940? 90 p. Biblio. p. 87-90.

Cover title: Elementary schools in a Redwood lumbering section study their own environment. A teacher's guide for acquainting local students with the principal resource.

1172 MOYER, SHELDON. 1950. Hammond Brings in the Big Reds. BIG, vol. 6, no. 2. A magazine of Goodyear Tire & Rubber Co. Detroit, Mich. p. 1-6.

A textual and pictorial treatment of the Hammond Lumber Company's history, personnel and operations on the occasion of its 50th anniversary.

1173 PACIFIC LUMBER CO. n.d. Facts About Scotia, Home of Palco Redwood Products. The Pacific Lumber Co., Scotia, Calif. 40 p. Illus.

Booklet giving interesting facts about Scotia and the Redwood industry.

1174 PARDEE, GEORGE C. 1906. California. California State Board of Trade, San Francisco.

California forests and scientific lumbering, vol. 17, p. 43.

1175 REDWOOD LUMBER MANUFACTURERS ASSOC. 1897. The Home of the Redwood. *Pac. Coast Wood and Iron,* San Francisco, Calif. 59 p. Illus., maps.

A popular account of the redwood lumber industry; profuse illustrations of all aspects of lumbering. Covers all phases, from felling to milling and shipping; some material on products and uses, properties of wood. Probably based on the publication of Edgar Cherry & Co. (1884).

1176 SMITH, CHARLES STOWELL. 1914. The Lumber Industry in California. U.S. Forest Serv. 231 p. Tables. Processed.

A fairly complete general treatment of the condition of the industry, as of 1914, segregated by pine and redwood regions, primarily. Includes stumpage value and supply, production, taxation, appraisal of the industry. Tables include average operating investments (1914).

1177 SMITH, KENNETH. 1953. Green Gold. [Calif. Redwood Assoc., San Francisco.] 8 p. Processed.

Speech before the Rotary Club of Arcata; basically an appeal to taking a "long hard look" at the present mushroom growth of lumbering in Humboldt County to see if a high rate of cutting can be continued.

1178 SMITH, KENNETH. 1948. Your Biggest Job. Paper read before 10th Redwood Logging Conference, May 28-29, 1948, Eureka, Calif.

Mentions contribution of R.L.C. to improvement of forest practices and the importance of keeping the private enterprise system alive.

1179 SPELLING, CARL. 1887. Handbook of Sonoma County. John B. Davis & Co., Santa Rosa, Calif.

Lumber industry, p. 39-41.

1180 TAYLOR, FRANK J. 1937. California Redwood. [Reprinted by Calif. State Chamber of Commerce from] *Calif.: Mag. of Pacific Business.* 27:2-6. June 1937. Illus.

Popular article describing the redwood lumber industry in several departments —forestry, logging, and milling. Illustrated with logging and milling scenes.

HISTORY OF LUMBERING

1181 ANON. 1923. Beginnings and Development of Trade on the Pacific Coast of North America. *Mercantile Trust Rev. of the Pacific.* 12: 11-12. Jan. 15, 1923.

First sawmill was erected by Isaac Graham in 1841, and the first steam sawmill about two years later by Capt. Stephen Smith of Baltimore.

1182 ANON. 1940. C. E. De Camp. *Calif. Lumber Merchant.* 19:20. Dec. 15, 1940. Illus.

Biographical sketch of the vice-president of the Caspar Lumber Co., San Francisco, and the Redwood Manufacturers Co., Pittsburg, Calif., and a pioneer redwood lumberman.

1183 ANON. 1941. Caspar President Tells of Early Days. *Timberman.* 42:60, 62. July 1941. Illus.

Reports the talk of C. E. DeCamp, pioneer lumberman and vice-president of the Caspar Lumber Co., telling of the role of his company in the development of the steam donkey and the logging railroad.

1184 ANON. 1940. Early Day Redwood Mill Scrapped. *Timberman.* 41:79. March 1940.

Includes a few reminiscences of H. B. Hickey on the old Albion Lumber Co. and the Navarro Lumber Co. mills in Mendocino County.

1185 ANON. 1931. Early Day Sawmills on Russian River: an Account of the "Inexhaustible" Redwood Forests That Once Lay Within Fifty Miles of San Francisco. *Timberman.* 32:28-29, 60. Feb. 1931. Illus.

"Delightful account of the early days in the Russian River country," as told by Wm. H. McCown, formerly of Bodega and Healdsburg. The pictures, one of the old Tyrone Mills and another of the railroad bridge across Brown Gulch, were first published in *Leslie's Magazine* in 1878.

1186 ANON. 1902. The First Lumbering in Humboldt County. *Pac. Coast Wood and Iron [Pioneer Western Lumberman].* 37:10. Jan. 1902.

Article on the felling of the first redwood trees in 1850 by James T. Ryan, and the location of the first camps.

1187 ANON. (Sam Hawkins.) 1937. For Eighty-five Years. *West Coast Lumberman [Lumberman].* 64:34. Aug. 1937. Illus.

Brief history of the Mendocino Lumber Co.

1188 ANON. 1942. For Fifty-nine Years. *West Coast Lumberman [Lumberman].* 69:18-24. Aug. 1942. Illus.

Descriptive account of the Union Lumber Co., Fort Bragg, Calif., from its beginning to 1942, including history, personnel, and facilities. See also *Forestry Digest,* Sept. 1956, p. 8-9.

1189 ANON. 1940. Old Redwood Project Again Revived. *Timberman.* 41:62, 64. March 1940. Illus.

Refers to Andersonia sawmill at Piercy in northern Mendocino County.

1190 ANON. (Sam Hawkins.) 1938. Pioneer Redwood Operators Quit After 89 Years. *West Coast Lumberman [Lumberman].* 65:56. June 1938.

News note on three generations of Bloomquists in lumbering, in Santa Cruz and Mendocino counties.

1191 ANON. (Sam Hawkins.) 1937. Since 1890. *West Coast Lumberman [Lumberman].* 64:24. June 1937. Illus.

Brief history of the Elk River Mill and Lumber Co., Humboldt Co.

1192 ANON. 1939. Since 1863. *West Coast Lumberman* [*Lumberman*]. 66:12-14, 57. June 1939. Illus.

The story of Dolbeer and Carson Lumber Co., in operation for 75 years.

1193 ANON. 1952. Tall Trees Grew Here Away Back. *Oakland Tribune* [Oakland, Calif.]. p. 10-W. May 1, 1952. Illus.

Article on the mills in Alameda County, operated in the 1840's.

1194 ANON. 1925. Travelog Describes Manufacture of Redwood in California. *Amer. Lumberman.* 2616: 52-53. July 4, 1925. Illus.

Popular article describing a trip into the redwood region, and the mills visited.

1195 ALVARADO, JUAN B. 1876. Historia de California. 5 vols. MS. in Univ. of Calif., Bancroft Library, Berkeley.

Vol. 5, p. 5-7, relate to Stephen Smith's grant of land from the governor, and the erection of a steam sawmill in 1843.

1196 BANCROFT, SCRAPS. 1850+. California Lumber Industry. [Newspaper clippings collected by the Bancroft Library, Univ. of Calif., Berkeley.]

A collection of clippings from about 1850 to 1880, primarily describing the condition of the industry, and including redwood. Not all sources given.

1197 BARNET, M. M., and J. O'LEARY. 1902. Statistics of California Production, Commerce and Finance: for the years 1900-1901. John Partridge, San Francisco. 191 p. Index, tables.

Subtitled: With brief sketches of the origin and development of mining, agriculture and horticulture in the State. Gives lumber resources and production by counties.

1198 BAUER, PATRICIA McCOLLUM. 1956. California's First Power Sawmill. *Timberman.* 57:102. Sept. 1956.

First power sawmill believed to be that of Capt. Peter B. Cooper, El Molina Ranch, Sonoma Co. Cost $10,000 to build in 1834. The water-power mill was destroyed in a flood 1840-1841.

1199 BAUER, PATRICIA McCOLLUM. 1950. History of Lumbering and Tanning in Sonoma County, California, since 1812. MS. in Univ. of Calif., Bancroft Library, Berkeley.

M.A. thesis, University of California.

1200 BLEDSOE, ANTHONY J. 1881. History of Del Norte County, California, With a Business Directory and Traveler's Guide. Wyman & Co., Eureka. 175 p.

Chapter 7, "The Lumber Resources of Del Norte Co.", p. 121-131, gives estimate of the timber resource and lumber prices. Describes the large mills (Lake Earl Mill, Elk River Mill, Smith's River Mill, Big Flat Mill), giving their production capacity, wages paid, and for the Elk River Mill a fairly complete description of the "progress of the lumber from the . . . yard till it is put up ready for shipment to San Francisco as box material."

1201 BONNER, W. G. 1894. The Redwoods of California. *Cassier's Mag.* 6(33):195-213. July 1894. Illus.

Good description of the trees and the forest, emphasizing the beauty of the region. Contains history of logging, particularly of the camps and crews, and a good description of ox-team skidding and driving on p. 210. Illustrations cover most logging activities of the time. Some information on milling, properties of the wood, and uses. Much of the information refers to Humboldt County.

1202 BRANHAM, ISAAC. Lumbering in 1847. 5 leaves. MS. in Univ. of

Calif., Bancroft Library, Berkeley.

The manuscript describes sawmills and property in Santa Clara County, California.

1203 BROBACK, CLARENCE W. 1953. Oral History Interview with John W. Larson, Forest History Foundation, Inc., at Redwood City, California, March 1953. 9 p. MS. in Univ. of Calif., Bancroft Library, Berkeley.

Redwood industry, milling and finishing lumber, grading, shipping, wages and hours, uses and finishing of redwood, oak tanbark.

1204 BUHNE, HANS HENRY. Papers, 1865-1897. MS. in Univ. of Calif., Bancroft Library, Berkeley.

Microfilm copies of selected items from original papers in the family's possession in Eureka. These supplement the John Kentfield & Company records.

1205 BURGESS, SHERWOOD D. 1951. The Forgotten Redwoods of the East Bay. [Reprinted from] *Calif. Hist. Soc. Q.* 30:1-14. Illus., biblio.

Logging and milling for the period 1840-1860, primarily in the Oakland hills. The sources for the material are from old documents, deeds, court records, etc., which are listed in the extensive bibliography at the end of the article.

1206 CALIF. STATE AGRICULTURAL SOCIETY. 1878. Pacific Coast Woodlands. In *Calif. State Agr. Soc. Trans.* [Calif. State Board of Agr. Report.] State Printing Office, Sacramento. p. 141-150. Tables.

At head of article: "Taken from an article in the S. F. Evening Bulletin of Jan. 5, 1878." Surveyed lands report (1877?); ten counties report redwood, including San Luis Obispo. Table gives list of 31 redwood mills in Humboldt, Mendocino, Sonoma and Russian River which are "represented in [San Francisco]" and their "yearly capacity in feet" is given. Five are run by water power, the rest by steam.

1207 CALIF. SURVEYOR-GENERAL'S OFFICE. 1856. Annual Report of the Surveyor-general of the State of California, 1856, by S. H. Marlette. State Printer, Sacramento. Doc. 5. 334 p. Table.

Reports from various county surveyors and assessors; statistical table on p. 50, and additional information scattered among reports. The following counties had information: redwood recognized in San Luis Obispo "but very sparing"; redwood in Marin, with 4 steam saw mills; redwood in Santa Cruz with 3 steam mills, 8 water power mills, each mill having an output of 1,200 ft. per day; Sonoma (Mendocino County included) had 3 steam mills, 5 water power mills, with a total output of 110,000 ft. lumber per day.

1208 CALIF. SURVEYOR-GENERAL'S OFFICE. 1879. Biennial Report of the Surveyor-general of the State of California, 1877-1879, by William Minis. State Printer, Sacramento. 235 p. Tables.

Tables include the number of steam and water power mills, the amount of lumber sawed, and the shingle production, by counties, for 1878 (p. 24) and 1879 (p. 47).

1209 CHERRY, EDGAR, & CO. 1884. Redwood and Lumbering in California Forests. Edgar Cherry & Co., San Francisco, Calif. 107 p. Illus.

A popular but comprehensive account of logging, transport of logs, and lumber manufacture as it was practiced at the time. Photographs (tipped in) are numerous and descriptive. Includes a quote from George D. [W.] Gray on lumbering, p. 57-64, and an "Essay upon Redwood" by A. Kellogg, p. 77-107.

1210 CHIPMAN, WILLIAM W. Papers, 1850-1929. MS. in California Historical Society, San Francisco.

The papers contained occasional information on redwood lumbering in Alameda County, 1852f.

1211 CLARY, PAUL D. 1936. Ox Shoe Tales. 27th Pacific Logging Cong. *Logger's Daily.* p. 64-65.

Description of bull team logging in the redwoods.

1212 [DAVENPORT, JOHN POPE.] Memoranda. MS. in San Mateo County Historical Association, San Mateo.

This transcript of memoranda of early life in San Mateo County, Santa Clara County, and San Francisco, California, was probably written by John Davenport, a pioneer lumberman.

1213 D[EFEBAUGH], J. E. 1904. The Editor's Pilgrimage into the Far West. *Amer. Lumberman.* Feb. 20/April 16, 1904. v.p. Illus.

A series of articles descriptive of lumbering in the West. The articles concerning the redwood region are the following: Feb. 20, p. 19-21, describes the Pacific Lumber Co.; March 5, p. 15-17, describes the Northern Redwood Lumber Co. at Korbel, and the railroads of Humboldt County; March 12, p. 19-21, describes the Vance Redwood Lumber Co. and the Hammond Lumber Co.; April 2, p. 16-18, is a history of John Dolbeer and William Carson; April 16, p. 16-17, is on E. C. Williams of the Mendocino Lumber Co. (or the Redwood Manufacturing Co.), and the Pacific Redwood Shingle Co. and W. H. Newell.

1214 DOLBEER & CARSON LUMBER COMPANY. 1868-1898. Log Book. A manuscript account book in Univ. of Calif., Bancroft Library.

The book records delivery of logs to north fork of Elk River, Humboldt County, Calif., and their joint flotation down the river to various mills after rafting on Humboldt Bay. Log brand marks are recorded. Pages 1-4 constitute a re-capitulation, 1868-1878 of "Book No. 1." Pages 10-43 make "Book No. 2," a journal of logs from Elk River, the lower gulches of Freshwater Creek, and other sources. The "Claims" producing the logs are identified by the owners' names. "Pine" is Douglas fir. Plus 9 loose sheets bearing on logs from Lindsay Creek, 1902-1908. Logging on the north fork of Elk River ceased, apparently in 1895 (p. 41), and was resumed in 1933 when a camp was built on the Brown Claim on the edge of a second-growth forest.

1215 DOLBEER & CARSON LUMBER COMPANY. Records, *circa* 1884-1940. 54 vols. MS. in Univ. of Calif., Bancroft Library, Berkeley.

These records consist of correspondence and accounts. They include records of the Bucksport & Elk River Railroad, Humboldt & Northern Railroad, and William Carson Estate Company.

1216 DOLLAR, GEORGE. 1897. Timber Titans. *Strand Mag.* [London]. 14: 82-90. July 1897. Illus.

Popularly written article on lumbering, primarily in Humboldt County, with descriptions and photographs of rafts and rafting.

1217 DRURY, AUBREY. 1954. John Albert Hooper and California's Robust Youth. [L. Kennedy, Printer, San Francisco.] 85 p. Illus.

Similar material in *Calif. Hist. Soc. Q.,* 31:289-305, Dec. 1952.

A biographical sketch. Relates his interests in the lumber business, wholesale and retail yards, and manufacturing of redwood at Trinidad.

1218 EAMES, NINETTA. 1892. Staging in the Mendocino Redwoods. *Overland Monthly.* 20 (ser. 2): 113-131; 265-284. Aug./Sept. 1892. Illus.

The articles contain much of historical interest. The trip was one by stage from Ukiah to Mendocino City and Fort Bragg. The lumbering history of Greenwood, Point Arena, Big River, Mendocino City and along the coast near Fort Bragg is treated in part. There is an account of a lumbering operation, including felling, log-making, skidding, and transportation, and an attempt to raft logs and products is described. The status of some of the mills is given, and the type of labor found in the industry.

1219 EDDY, JOHN M. 1893. In the Redwood's Realm. D.S. Stanley & Co., San Francisco. 112 p. Illus., tables, maps.

Sub-titled: By-ways of wild nature and highways of industry as found . . . in Humboldt Co., Calif. Compiled and arranged by J. M. Eddy, under the direction of the Humboldt Chamber of Commerce. An advertising brochure, treating all the industries of the county, and with many good historical references to redwood. Gives the original, cutover, and present (1893) timber areas, p. 5-7, and the land transactions from 1881-1892, p. 79. Covers redwood lumbering, including tables on: the number of and investments in mills, p. 50; the amount and value of redwood products, p. 49; retail lumber prices at Eureka, p. 89; wages for both milling and logging, p. 111. Numerous half-tones illustrate lumbering primarily, including logging, camps, transportation, and milling.

1220 ELK RIVER MILL & LUMBER CO. 1883-1933. MS. Office Records. In Univ. of Calif., Bancroft Library, Berkeley.

About 67 volumes including time books, bills, stock inventory, lumber sales, day books, cash books, ledgers, journals, receipts, expense segregation, cargo and shipment records, employees accounts. The company operated a sawmill at Falk on Elk River, near Eureka, Humboldt Co., Calif., until about 1940, after which the mill was closed and the remaining stumpage was sold to Hammond Lumber Co. on a cutting-contract basis.

1221 EUREKA REDWOOD LUMBER CO. 1954? The Titans, Story of the West's Oldest Redwood Lumber Mill. . . . M & M Wood Working Co., Portland, Oregon. [Eureka, Calif.] 9 p. Illus.

History of the Eureka Redwood Lumber Co., which is a subsidiary of the M & M Wood Working Co., from 1853 to date. The first mill on the present site was the Bay Mill, which became the Dolbeer and Carson Lumber Co. Includes a description of the early logging methods and equipment, from bull teams through the donkey engine to the present use of tractors and selective cutting. Illustrations include photographs of bull team skidding and early railroads.

1222 FAIRBANKS, W. W. 1926. Historical Sketch of the Redwood Industry. *Timberman.* 27:38-41, 168. June 1926. Illus.

Popular but good account of the beginnings of the lumber industry in Santa Cruz, Sonoma, Mendocino and Humboldt counties, with particular reference to the early mills. There are many illustrations of mills and logging operations, including a picture of handlogging on the Albion River in 1853, which is "thought to be the oldest in existence;" the operation supplied logs to the Dallas, Davidson & McPherson mill erected in 1853.

1223 FRASER, FRANK C. 1953. Oral History Interview with John W. Larson, Forest History Foundation, Inc., at Fortuna, California, March 1953. 4 p. MS. in Univ. of Calif., Bancroft Library, Berkeley.

Redwood industry, donkey engines, log transportation, logging camps.

1224 FRITZ, EMANUEL. 1950. From Bull Teams to Slacklines to Tree Farms. *Redwood Region Logging Conf. Bul.*, Brizard-Matthews Machinery Co., Eureka, Calif. p. 2-3, 13-14. Illus.

Popular article on the history of logging changes in the redwood region, elaborating on tree farms.

1225 FRITZ, EMANUEL. 1936. Redwood Industry: Its History and Development. 27th Pacific Logging Cong. *Logger's Daily.* p. 45-50. Illus.

Popular article on redwood, including age, size, stands, early history of logging, advent of tractors, milling, logging problems, bark peeling, slash disposal.

1226 FURLONG, A. T. (Jack). 1953. Oral History Interview with John W. Larson, Forest History Foundation, Inc., at Fort Bragg, California, March 1953. 9 p. MS. in Univ. of Calif., Bancroft Library, Berkeley.

Redwood industry, sawmills, bandsaws, saw filing, traveling and selling saws and filing room machinery in northern California.

1227 GORDON, DAVID E. 1904. Humboldt Lumber Mills. *Pac. Coast Wood and Iron* [*Pioneer Western Lumberman*]. 42: v.p. July/Dec. 1904. Illus.

A series of six articles giving the history of the redwood lumber mills, with numerous half-tones of the mills and the men concerned with their operation. The mills covered include: July, p. 10-11: Papoose Mill, 1851; Ryan, Duff & Co.; Medina Mill; Picayune Mill, 1852; Mula Mill, 1853. Aug., p. 10-12: Vance Mill, 1853; Dolbeer & Carson Mill (Bay Mill); Smiley or Jones "Little Mill," 1854. Sept., p. 10-11: Cousins, or Russ, Wood & Co. Mill, 1868; Jones "Big Mill"; Duff & Co. Mill; Dolly Varden Mill, Arcata, 1872; Jolly Giant Mill, Arcata, 1874; Salmon Creek Mill, 1875; Springville (Fortuna) Mill; Rohnerville Mill, mid-sixties. Oct., p. 10-11; Trinidad Mills of F. P. and J. A. Hooper, 1851; Vance's Mad River Mill, 1875; Union, or Flanigan & Brosnan Mill, 1876. Nov., p. 10-11: McKay & Co. —Occidental Mill, Eureka, 1875; Warren Creek Mill, 1881; Blue Lake Mill, Mad River, 1882; Humboldt Lumber Mill Co., Korbel, 1883; Eel River Valley Lumber Co., Newburg, 1884; Riverside Mill, 1885; Elk River Mill & Lumber Co., 1886. Dec., p. 10-11: Pacific Lumber Co., Scotia, 1869; Hammond Lumber Co., Samoa; Holmes Lumber Co., Eureka, 1903; Freshwater Lumber Co.

1228 GORDON, GEORGE. 1874. The Redwood (Sequoia Sempervirens). *The Garden* [London]. 5:83. Jan. 24, 1874.

The author's impressions are given of the large size of the redwoods, and the logging methods of the time are briefly described.

1229 GRAY, GEORGE W. 1883. Forestry: The Redwood. *Gardeners' Chronicle* [London]. 20 (ser. 2): 497. Oct. 20, 1883.

Also in *San Francisco J. of Commerce*, Aug. 23, 1883; Cherry, Edgar, & Co., *Redwood and Lumbering in California Forests*, p. 57-64 (as George D. Gray), 1884.

Good general notes on the Redwood Belt, climate, size of trees, uses, properties of the wood, mills, and shipping. Estimate of standing timber is 26 billion feet; yearly consumption is 200 million feet (figures for 1880's).

1230 HAWLEY, A. T. 1879. Humboldt County, Calif., Its Scenery, Climate, Resources and Advantages. J. E. Wyman & Son, Eureka, Calif. 42 p.

First ". . . described in a series of letters to the S. F. Evening Bulletin . . . March 1879." Primarily concerned with the problem of accessibility, and the five railroads developed within the county.

1231 HAYS, JOHN COFFEY. Papers. MS. in California Historical Society, San Francisco.

The papers contain testimony, dated November 17, 1857, given in a case concerning redwood lumbering in Alameda County, ante 1857. Howe's sawmill (1854) and Whipple's steam sawmill, both in San Francisco, are mentioned in the papers.

1232 HEITMAN, HERMAN. 1953. Oral History Interview with John W. Larson, Forest History Foundation, Inc., at Eureka, California, March 1953. 11 p. MS. in Univ. of Calif., Bancroft Library, Berkeley.

Redwood logging, building logging railroads and trestles, log transportation, logging camps, chutes at Coos Bay, Oregon, autobiographical material including army experiences, White Earth Indian Reservation (Minnesota).

1233 HEXBERG, CASPAR. 1953. Oral History Interview with John W. Larson, Forest History Foundation, Inc., at San Francisco, California, March 1953. 5 p. MS. in Univ. of Calif., Bancroft Library, Berkeley.

Redwood lumber transportation, redwood schooners, coastwise shipping, ship crews.

1234 HITTELL, JOHN S. 1882. The Commerce and Industries of the Pacific Coast of North America. A. L. Bancroft & Co., San Francisco. 819 p. Illus., index.

Chapter 32, "Wood," p. 579-634, contains most of the lumber companies of the time, giving each a paragraph describing ownership, capacity, and holdings.

1235 HITTELL, JOHN S. 1863. The Resources of California. A. Roman & Co., San Francisco. 464 p.

Some facts about redwood, p. 92-93. On p. 306-312 there is a description of "getting logs to the mills in Humboldt County," including transport of logs, cutting, rafting, sawing, and splitting by axe and other tools.

A 6th ed., rewritten, in 1874, contains an abbreviated account of lumbering only.

1236 HUMBOLDT TIMES. 1904. Humboldt County Souvenir, 2d ed. The Times Pub. Co., Eureka, Calif. 210 p. Illus., tables.

Subtitled: Being a frank, fair, and accurate exposition, pictorially and otherwise, of the resources, industries and possibilities of this magnificent section of Calif. Lumbering described and illustrated, p. 42-96, including the felling, logging, and mill practices at that time. Enumeration and photographs of the mills then operating with the acreage held by each. (1st ed. published under title: Souvenir of Humboldt County.)

1237 INGERSOLL, ERNEST. 1883. In a Redwood Logging Camp. *Harper's Mag.* 66:193-210. Jan. 1883. Illus.

Author tells of a trip to Duncan's Mill on Russian River. He briefly describes old Fort Ross and how the Russians hewed their lumber. He gives an account of a logging operation, including descriptions of the men, ox-driving to the landing, a logging railroad, and a logging camp.

1238 JOHN KENTFIELD AND COMPANY. Records, 1853-1923. 184 boxes, 129 volumes, 29 cartons, 1 portfolio. MS. in Univ. of Calif., Bancroft Library, Berkeley.

Correspondence, accounts, and papers of a lumbering and shipping firm founded by John Kentfield, H. H. Buhne, and D. R. Jones. Some Kentfield family correspondence and papers are included. A key to the arrangement and a report of the collection is available.

1239 JONES, DAVID R., AND CO. Daybooks, 1856-1862. 2 vols. MS. in Calif. Historical Society, San Francisco.

The daybooks contain information on a sawmill operated in San Francisco by Jones and John Franklin and on a subsidiary redwood sawmill operated by Jones and John Kentfield in Humboldt County, California.

1240 KALENBORN, MRS. A. S. 1944. Early Lumber Industry in San Mateo County. MS. in San Mateo County Historical Association, San Mateo.

This paper was read by Mrs. Kalenborn at a meeting of the San Mateo County Historical Association on October 19, 1944.

1241 KLEIN, JULIUS. 1908. Development of the Manufacturing Industry in California Up to 1870. [Univ. of Calif., Berkeley.] 131 p. Biblio. Processed.

Thesis (M.L.) — Univ. of Calif. May 1908. (Author later became Assistant Secretary of Commerce.)

Mentions the use of redwood by the Russians on p. 48, and lumbering and shipbuilding on p. 75-81.

1242 THE KNAVE. 1941. Our Redwood Story. *Oakland Tribune.* [Oakland, Calif.] p. B-1. Sept. 7, 1941.

Brief historical notes and reminiscences on lumbering on Redwood Mountain and Canyon back of Oakland in the 1850's.

1243 LAMB, FRANK H. 1903. From the Tree to the Finished Lumber. *Out West.* 19:343-356. Oct. 1903. Illus.

A popular article dealing with the lumber industry on the Pacific Coast, including redwood. Describes life in a logging camp, felling operations, transportation, and log storage.

1244 LIBBEY, HOWARD A. 1953. Oral History Interview with John W. Larson, Forest History Foundation, Inc., at Arcata, Calif., March 1953. 6 p. MS. in Univ. of Calif., Bancroft Library, Berkeley.

Redwood industry, transportation of logs and lumber, handling lumber, milling machinery, marketing problems, training personnel, autobiographical information.

1245 LUKENS, T. P. 1911. The Sequoias. *J. Geog.* 9:268-270. June 1911. Brief and general biblio.

Brief statement on the first lumbering in California, at Mill Valley, from 1835-1860. The first sprouts were cut in 1875.

1246 MAY, RICHARD H. 1953. Early History of the Redwood Lumber Industry. *Redwood Region Logging Conf. Bul.*, Brizard-Matthews Machinery Co., Eureka, Calif. p. 8-9. Illus.

Concise history of the early mills in the various counties of the redwood belt, including Isaac Graham's mill at Santa Cruz in 1842, and Stephen Smith's mill at Bodega, Sonoma County, in 1843.

1247 MELENDY, HOWARD BRETT. 1952. One Hundred Years of the Redwood Lumber Industry, 1850-1950. [Stanford, Calif.] 377 p. Tables, maps. Processed. (Microfilm copy located in Library of Univ. of Calif.; original in Stanford Univ. Library.)

Thesis (Ph.D.) — Stanford Univ.

1248 MENDOCINO LUMBER COMPANY. Records, 1905-1925. 1 carton (including 9 volumes and loose papers). MS. in Univ. of Calif. Bancroft Library, Berkeley.

The records consist chiefly of invoices, shipping orders, and accounts.

1249 MENEFEE, CAMPBELL A. 1873. Historical and Descriptive Sketch Book of Napa, Sonoma, Lake and Mendocino. . . . Reporter Pub. House, Napa City [Calif.]. 356 p. Illus.

Brief statement as to the location of redwood forests, and the procedure of following timber back as it is cut by means of roads; or in the case of mills at the mouth of the Russian and Gualala Rivers by water transportation, p. 276.

1250 MOORE AND DEPUES. 1878. Illustrated History of San Mateo County, Calif. G. T. Brown and Co., San Francisco.

An account of lumbering from its earliest beginning in the county. General history of Redwood City with special reference to its natural advantages, and proximity to redwood forests.

1251 NEVENS, L. M. 1912. Redwood in Humboldt County. *Pioneer Western Lumberman.* 57:21. Mar. 1, 1912.

First shipment of redwood lumber out of Humboldt Co. was made in 1855.

1252 NORDHOFF, CHARLES. 1874. Northern California, Oregon, and the Sandwich Islands. Harper & Bros., New York. 256 p. Illus.

Chapter 6, "Mendocino Coast and Clear Lake" and Chapter 8, "The Redwoods and the Saw-mill Country of Mendocino" contain information on redwood and lumbering. Chapter 8 is a detailed account of logging techniques, sawmills, and logging camp conditions then prevalent in the region, including length of the working day, the class of men, and their life in the camps. This same information is also in *Harper's Mag.*, 48:35-45, Dec. 1873. The same illustrations on lumbering in Mendocino are also found in his "California for Health, Pleasure, and Residence," 1874, but without text to accompany them.

1253 OLSEN, CAPTAIN MIDNIGHT. 1953. Oral History Interview with John W. Larson, Forest History Foundation, Inc., at San Francisco, California, March 1953. MS. in Univ. of Calif., Bancroft Library, Berkeley.

Coastwise shipping of redwood lumber, San Francisco earthquake.

1254 THE PACIFIC LUMBER CO. 1915-1935. MS. Records, Correspondence, Reports, Stock Records, etc. In Univ. of Calif., Bancroft Library, Berkeley.

The lot consists of company files on loans, notes, interest, eastern sales, budgets, financial statements and a large file of correspondence relating to negotiations with Save-the-Redwoods League for the purchase of the Dyerville & Bull Creek areas for inclusion in the State Park system. This file includes reports, appraisals, cruises, costs, returns, etc.

1255 PACIFIC LUMBER COMPANY. Records, 1866-1870. 2 cartons (including 11 volumes and loose papers). MS. in Univ. of Calif., Bancroft Library, Berkeley.

The records consist chiefly of ledgers, accounts, and checkbooks.

1256 PALAIS, HYMAN, and EARL ROBERTS. 1950. The History of the Lumber Industry in Humboldt County. *Pac. Hist. Rev.* 19:1-16. Feb. 1950.

Rather sketchy account, but brings together information not previously gathered together, including the men who pioneered the industry, and various early mills. Sources are given.

1257 REED, ANNA MORRISON. 1904. The Redwoods of Mendocino. *The Northern Crown.* 1:1-5. April 1904. Illus.

General article illustrating the logging and milling in the county, with direct reference to the L. E. White Lumber Co. at Greenwood. Article reprinted in the issue of Sept. 1905, p. 8-12, with additional photographs of logging scenes.

1258 ROUSSEAU, B. G. 1924. Early Lumbering in California. *Overland Monthly.* 82 (ser. 2):451-452, 480. Oct. 1924.

Account of the mill erected at Bodega Corners by Captain Smith in 1843, and some brief material about lumbering in the Oakland Hills. Sources not given.

1259 ROWLAND, LEON. 1929. Pioneers of the Redwoods. *Timberman.* 30: 44. March 1929.

Popularly written history of the first power sawmill located in Santa Cruz County. Operated by Isaac Graham in 1842. Also contains some information on early shipments.

1260 RUTLEDGE, P. J. 1953. Oral History Interview with John W. Larson, Forest History Foundation, Inc., at Eureka, California, March 1953. 10 p. MS. in Univ. of Calif., Bancroft Library, Berkeley.

Redwood industry, early sawmills, felling, donkey engines, log chutes, log transportation, autobiographical information.

1261 SONOMA LUMBER COMPANY. Records, *circa* 1877-1884. 5 vols. MS. in Univ. of Calif., Bancroft Library, Berkeley.

The records consist of ledgers, stock books, bylaws, and other papers.

1262 STANFORD, EVERETT RUSSELL. 1924. A Short History of California Lumbering. [Berkeley, Calif.] 92 + 58 p. index. Extensive biblio. Processed.

Thesis (M.S.) — Univ. of Calif., May 1924.

Includes general lumbering and milling history, with specific references made to redwood resource, ownership, trade, and forestry practices. Bibliography contains 415 entries, including a brief subject index to its contents.

1263 STEWART, E. J. 1953. Oral History Interview with John W. Larson, Forest History Foundation, Inc., at Eureka, California, March 1953. 8 p. MS. in Univ. of Calif., Bancroft Library, Berkeley.

Redwood industry, logging, sawmills, handling lumber, changes in machinery and methods.

1264 TAYLOR, BAYARD. 1850. Eldorado. Geo. P. Putnam, New York. 251 p.

Mentions Col. Fremont's steam sawmill at San Jose, p. 70; redwood near Monterey, p. 127; Santa Cruz, with references made to Graham's mills, p. 195.

1265 TAYLOR, RUTH. 1937. Trailing the Coast Ghosts. *San Francisco News* [San Francisco]. v.p. Oct. 18-23, 1937. Illus.

A series of six brief newspaper articles on several old lumber towns on the Sonoma and Mendocino County coastline.

1266 TILLEY, WALKER B. 1953. Introduction [to the Annual Meeting]. Soc. Amer. Foresters. Northern Calif. Section. *Papers presented* Dec. 5, 1953. p. 1-3. Processed.

Brief history of logging in the redwood and Douglas fir belts, leading into the Tree Farm Program.

1267 WATTENBURGER, RALPH T. 1931. The Redwood Lumbering Industry on the Northern California Coast, 1850-1900. [Univ. of Calif., Berkeley.] 87 p. Biblio. Processed.

Thesis (M.A.) — Univ. of Calif. Aug. 1931.

A history of the industry, including mills, logging methods, labor, equipment, transportation, and marketing, and a chapter on acquisition of land which includes the primary legislation of the period. Many references to the men who pioneered the industry in Del Norte, Humboldt, and Mendocino counties. Bibliography includes primary source material.

1268 WEIDBERG, DOROTHY. 1940. The History of John Kentfield & Co., 1854-1925.

Thesis (M.A.) — Univ. of Calif. 1940.

John Kentfield & Co. was a lumber manufacturing and shipping firm in San Francisco.

1269 WILLIAMS, E. C. 1912. The Redwood Operations in California. *Pioneer Western Lumberman.* 58: 9-13. July 15, 1912.

First mill and first foreign shipment of lumber.

1270 WILLIAMS, HENRY F. 1878. Recollections on Early Days of California. 16 leaves. MS. in Univ. of Calif., Bancroft Library, Berkeley.

The recollections contain brief mention of lumber supplies in San Francisco in 1849, and of the building of the city.

1271 WILLIAMS, MARY FLOYD. n.d. Papers. 1 portfolio. MS. in Univ. of Calif., Bancroft Library, Berkeley.

The papers include a biographical sketch of Edward C. Williams, clippings of an account by him of the first redwood operations in California, items concerning the redwood association, and obituaries from various papers.

1272 WILSON, R. C. 1937. Early Day Lumber Operations in the Santa

Cruz Redwood Region. *Timberman.* 38:12-15. May 1937. Illus.

The author gathered the data while making a type map of the region for the Calif. Forest and Range Experiment Station. Detailed account of operations in Santa Cruz and San Mateo counties.

1273 WILSON, R. C. 1937. Redwoods of the Santa Cruz — A Logging Saga. *Amer. Forests.* 43:478-481, 510-511. Oct. 1937. Illus.

Historical treatment of lumbering in the Santa Cruz mountains. Gives original area of virgin redwood as 650 square miles, 1937 as 50 square miles or 8 per cent of total; 1937 logged area approaches 400,000 acres.

RESEARCH *(Forests and Products)*

1274 CALIF. AGRICULTURAL EXPERIMENT STATION. 1920. Redwood Forests. [Reprinted from] the Rpt. of the College of Agr. and Agr. Expt. Sta. of the Univ. of Calif., from July 1, 1919 to June 30, 1920. [2] p.

Outline of a program of investigation which would lead to permanent forest management in the redwood region, prepared by D. Bruce, W. Metcalf, and E. Fritz.

1275 CALIF. REDWOOD ASSOC. REDWOOD RESEARCH COMMITTEE. 1949+. Minutes. Calif. Redwood Assoc., San Francisco. Processed.

Complete file in the office of the Calif. Redwood Assoc., San Francisco, and an incomplete file in the Forestry Library, Univ. of Calif., Berkeley. Covers actions of the Committee on research projects.

1276 CALIF. STATE RECONSTRUCTION & REEMPLOYMENT COMMISSION. 1947. Third Report to the Governor and the Legislature. State Printer, Sacramento. 1947.

Recommendations for the establishment of a forest products laboratory at the Univ. of Calif., Berkeley.

1277 FRITZ, EMANUEL. 1921. A Survey of the Wastes Resulting from the Logging and Milling of California Redwood and Associated Species. Project 651. Calif. Agr. Expt. Sta., Berkeley. 17 p. Processed. (Located in the Project Files of the Univ. of Calif. School of Forestry, and Calif. Agr. Expt. Sta., Berkeley.)

A survey of waste in the redwood belt, based on sampling of small areas in the woods and the refuse conveyor chains in the mills. Gives causes, amount and character of waste material. Central chippers, at the mills and in the woods, are recommended. Woods waste is estimated at 229,000 cords of redwood and 47,000 cords of Douglas fir per year. Mill waste is estimated at 490 cords of redwood and 90 cords of Douglas fir per day, or a total of more than 300,000 cords per year.

1278 INSTITUTE OF PAPER CHEMISTRY. 1946. Redwood. Inst. of Paper Chem., [Appleton, Wisc.]. p. 47-235. Illus., tables, biblio. Processed. [Reprinted from] Research Bulletin, The Inst. of Paper Chem., vol. 12, No. 2, Dec. 1945.

Subtitled: A Report of fundamental investigations and related application studies for The Pacific Lumber Company [Scotia, Calif.], 1937-1945. This is a report "of research aimed at developing methods for utilizing or profitably disposing of the various wastes associated with redwood logging and lumber operations. . . . The program described does not cover the activities of the company itself in reducing the volume of waste by more efficient lumbering methods and by developing new uses for materials normally considered as waste, but deals rather with the conversion of wood components by chemical steps into products of commercial interest and industrial use." A very complete analysis, covering forest and mill wastes; botany of the stem, bark, and root; chemical properties of the wood; chemical composition of the bark, cones, needles; applications of redwood: plastics, pulping, fuel; utilization of redwood extractives; bark fiber and dust. Illustrations include cross sections, photographs of equipment and processes, drawings; tables give findings of various tests.

1279 PRATT, WILLARD E. 1953. New Redwood Products and Manufacturing Methods. Soc. Amer. Foresters. Northern Calif. Section. *Papers presented* Dec. 5, 1953. p. 24-27. Processed.

Recounts recent changes and additions in redwood products including chips, and the results of research of the Calif. Redwood Association in sawmilling and seasoning.

1280 U.S. FOREST SERVICE. CALIF. REGION. 1931. Forest Research in the California Regions, 1930-1931. U.S. Forest Serv. Calif. Region. 141 p. Processed.

Section titled "Forest Management — Redwood Region," p. 31-35, outlines investigations to be carried out by the Calif. Forest Experiment Station for a redwood study, including interviews with those interested in the area, field work, and mapping, and a project to study the comparative merits of artificial and silvicultural reforestation.

LABOR AND EMPLOYMENT

1281 ANON. (Stuart B. Leete.) 1941. Highly Developed Safety Program. *West Coast Lumberman* [*Lumberman*]. 68:18, 21. May 1941. Illus.

Methods of reducing accidents at the Union Lumber Co., Fort Bragg.

1282 ANON. 1953. Incentive Pay Plan. *Lumberman.* 80:94, 112. Nov. 1953. Illus.

Describes the pay plan of the Rockport Redwood Company's gyppo logging crews.

1283 ANON. 1937. Redwood Empire is "Green Hell" for Workers. *Western Worker* [*People's World*], San Francisco. March 22, 1937.

Article in the western organ of the Communist Party of the U.S.A., containing statements referring to the robbery of the timber land, working conditions, and the general plight of the employees of the lumbering companies.

1284 ANON. 1942. Women in Redwood Mills. *West Coast Lumberman* [*Lumberman*]. 69:50. June 1942. Illus.

At Union Lumber Company's planing mill at Fort Bragg, Calif.

1285 ANON. 1942. Women Workers in Redwood Mill. *Timberman.* 44:81. Nov. 1942. Illus.

At the Hammond Lumber Co., Samoa, Calif.

1286 ATKINS, J. WILLIAM. 1914. The Lumber Industry in California; A Survey of Labor, Living and Other Conditions. In *Sixteenth Bien. Rpt. of the Bur. of Labor Statistics of the State of Calif., 1913-1914.* State Printing Office, Sacramento. p. 51-150. Illus., tables.

Logging camps and mills were covered, including wages, nationalities of employees, employment and conditions. Northern Redwood District specifically discussed, p. 136-143 (17 companies surveyed, with 7198 persons seen in 46 logging camps); Southern Redwood District discussed, p. 143-144 (Santa Cruz County primarily, with 284 men and their families seen in 3 sawmills).

1287 CALIF. INDUSTRIAL ACCIDENT COMMISSION. 1917. California Logging and Saw Mill Safety Orders. *Timberman.* 18:48t-48x. Feb. 1917. Illus.

The safety orders, including diagrams and graphs to illustrate the provisions.

1288 COLLINS, WALTER G. 1955. How Safety Came to Lumbering. *Amer.*

Forests. 61:20-23, 58-59. May 1955. Illus.

Author is a redwood lumberman — Union Lumber Co. and Hammond Lumber Co. — and consultant. Took a leading part in setting up safety programs while at Union. The article concerns safety measures in logging in general.

1289 FISCHER, STEPHEN. 1948. War in the Redwoods. *Chronicle* [San Francisco, Calif.]. "This World" section. Feb. 8, 1948. Illus.

A reporter's description of the causes of the strike in the redwood region, beginning in January 1946: its status, with comments by principals. (Note: The strike ended in May 1948.)

1290 HILL, FENTRESS. 1947. The Redwood Strike. Redwood Operators Committee? San Francisco. 15 p.

Testimony by the president of the Northern Redwood Lumber Co. before the House Committee on Education and Labor, March 3, 1947. Gives the history and background of the strike, which began on Jan. 14, 1946.

1291 TAYLOR, FRANK J. 1951. Paradise with a Waiting List. *Sat. Evening Post.* 223:36-37, 103-104, 106-107. Feb. 24, 1951. Illus.

Popular article describing the company-owned redwood town of Scotia, Calif. Some comments on lumbering and forestry. Colored photographs of the town, the homes, and lumbering operations.

LOGGING

General

1292 ANON. (George Craig.) 1953. Good Logging Practices Demonstrated on Redwood State Forest. *Timberman.* 54:54-56, 91. June 1953. Illus.

Description of the forest, logging and protection practices on the Jackson State Forest near Fort Bragg, Calif.

1293 ANON. 1948. Hammond Camp at Big Lagoon. *Timberman.* 49:76, 78, 80, 82. July 1948. Illus.

Hammond Lumber Company's new camp; illustrated with photos of buildings, interiors, and pond.

1294 ANON. 1950. Logging Fir and Redwood. *Timberman.* 51:42-43. Aug. 1950. Illus.

Descriptive, with illustrations, of operations of Hamilton Bros. Logging Co., Crescent City.

1295 ANON. 1901. Logging in the Redwood Forests of California. *Sci. Amer. Supplement.* 52:21359-21360. July 20, 1901. Illus.

Brief descriptive account of logging method. The photographs are of the Vance Redwood Lumber Co., Eureka, Calif.; mainly show size of logs.

1296 ANON. 1938. Logging in the Redwoods. *West Coast Lumberman* [*Lumberman*]. 65:26. Dec. 1938. Illus.

Description of Dolbeer and Carson Lumber Co. operation, emphasizing heavy equipment.

1297 ANON. 1936. Logging in Santa Cruz. *Timberman.* 37:87. May 1936.

Brief news note on the mills of Santa Cruz County.

1298 ANON. (Sam Hawkins.) 1938. Logging Redwood in Rough Country. *West Coast Lumberman* [*Lumberman*]. 65:28-29. May 1938. Illus.

Description of the Monterey Bay Redwood Co. operation near Santa Cruz.

1299 ANON. 1903. Methods in Far West Lumbering. *Amer. Lumberman.* 1469:13-14. July 18, 1903.

Brief discussion of the problems involved in the logging and milling of redwood, with particular reference to the difficulties encountered by the eastern operators due to the size of the logs.

1300 ANON. 1935. Redwood Logging. *West Coast Lumberman* [*Lumberman*]. 62:14-17, 54. May 1935. Illus.

Subtitle: The men, methods and equipment employed by northern loggers of the Redwood Empire Division.

1301 ANON. 1886. The Redwoods of Northern California. *Forestry* [Edinburgh]. 11:688-692. March 1886.

General description of the region, logging and loggers, and the wood.

1302 ANON. 1942. Roy L. Hale, Redwood Gyppo. *West Coast Lumberman* [*Lumberman*]. 69:45. July 1942. Illus.

Contract logging for The Pacific Lumber Co. and Union Lumber Co., in Humboldt County.

1303 ANON. 1950. Union Lumber Company Develops New Cold-decking Unit. *Lumberman*. 77:78-79. July 1950. Illus.

Development of a machine utilizing hydraulically controlled tongs for taking logs from the pond to the deck; also used for unloading trucks.

1304 ANON. 1936. What's New in Logging. *West Coast Lumberman* [*Lumberman*]. 63:9-13. Sept. 1936. Illus.

General resumé of logging methods and equipment in the West, including a section of the development of selective logging in redwood.

1305 ANON. 1942. Yager Creek: New Log Source for Scotia Mills. *Timberman*. 43:11-15, 46. June 1942. Illus., map.

Description of new logging camp and operation.

1306 BRUNDAGE, MARSDEN R. 1937. An Analysis of Selective Cutting on a Sample Plot of Virgin Redwood Timber in Humboldt County, Calif. U.S. Forest Serv., Calif. Forest and Range Expt. Sta. Forest Research Note No. 17. June 10, 1937. 11 p. Tables. Processed.

Report on some results obtained on a study of 79 acres in Henry Gulch on the Dolbeer & Carson Lumber Co. property, logged in 1935. The log scale removed was 83,000 per acre. Records were kept of each tree before and after cutting and some were followed through the mill. The report gives data on the minimum profitable log and also the minimum profitable tree. It closes with a composite set of figures and a graph to show the profit which might be expected by logging through several different diameter limits. The greatest profit per thousand results if only trees over 70 inches at the small end of the butt log are taken; and the greatest profit per acre is derived if the diameter limit is 35 inches at the small end of the butt log. Presented for the first time at the second Redwood Region [Logging] Conference, June 11, 1937.

1307 BRUNDAGE, MARSDEN R. 1935. Working Plan; Redwood Mill Production Study. U.S. Forest Serv. Calif. Forest Expt. Sta. May 22, 1935. 14 p. Tables. Processed.

Resumé of cooperative redwood logging study project, Henry Creek Plot, in cooperation with the Dolbeer and Carson Lumber Co.

1308 CORNWALL, GEORGE F. 1940. Feeding Seven Head Rigs. *Timberman*. 41:14-15. Sept. 1940. Map.

Description of the Yager Creek logging operation of The Pacific Lumber Co., Scotia, Calif.

1309 ECKBO, NILES [NILS] B. 1909. Logging in the Redwoods. *Forestry Q.* [*J. Forestry*]. 7:139-143. Illus.

Humboldt County.

1310 FIFTH NATIONAL CONSERVATION CONGRESS. FORESTRY COMMITTEE. 1913. Redwood Type. Fifth National Conservation Congress, Wash., D.C. 396 p.

Redwood produces a good all purpose wood. Customary method of logging is extremely destructive of the forest and leaves it in very bad condition for regeneration.

1311 FOGG, C. N. 1914. Logging in the Redwood Country. *Steam Machinery [The Clyde Log]*. 2:71-76. March 1914.

Logging procedure from standing trees to finished lumber.

1312 FRITZ, EMANUEL. 1936. Advent of Tractor in Redwood Region. *Timberman*. 37:14-15. Jan. 1936.

Part of a paper read before the Western Forestry and Conservation Assoc. on Dec. 12, 1935. Contains information on the logging practices and advantages of the tractor.

1313 FRITZ, EMANUEL. 1940. Redwood Forest Management for Utilization. *Mechanical Engineering*. 62:859-863. Dec. 1940. Illus.

Condensed in *Conservation*, 7:34-37, Jan.-Feb. 1941.

Address before the American Society of Mechanical Engineers, Spokane, Wash., on the operating and management problems in the redwood region, including selective cutting methods, reforestation, logging operations, transportation, peeling, yarding, and use of tractors. (Note: Comments on the paper by M. Bradner, D. S. Jeffers, and C. R. Patrie in the May 1941 issue of *Mech. Engineering*, p. 388-389.)

1314 FRITZ, EMANUEL. 1955. R.R.L.C. Objectives. *Redwood Region Logging Conf. Bul.*, Brizard-Matthews Machinery Co., Eureka, Calif. p. 4.

"Forestry was born of logging." States that the purpose of the Conference is the improvement of forest and logging practices in Northwest California, and calls for cooperation between logger and forester.

1315 GRIFFITH, ED. 1955. Planning a Logging Program. *Redwood Log*, Hammond Lumber Co., Samoa, Calif. 8:1-2. April 1955. Illus.

Brief and general article in the house organ.

1316 HALLIN, WILLIAM. 1939. Redwood Logging Costs in Mendocino County. U.S. Forest Serv. Calif. Forest and Range Expt. Sta. Research Note No. 20. April 25, 1939. 21 p. Tables. Processed.

Preliminary results of time studies of the various steps in woods operations for economic selection cutting. Tables include time and cost data for felling, bucking, peeling, yarding, railroad transportation, and composite cost tables. (Note: See also W. Hallin, 1939, "Redwood Railroad Transportation Costs Mendocino County" for flat car costs; the railroad costs in this study give figures only for coupled bob cars or small pony trucks.)

1317 LANSING, DEAN. 1947. Redwood Logging. *Calif. Engineer*, Univ. of Calif., Berkeley. p. 7-9, 16. March 1947.

General article containing some history and lore, as well as present logging methods from the engineer's viewpoint.

1318 LEETE, F. A. 1920. Lumbering and Wood-working Industries in the United States and Canada. Govt. Monotype Press, Simla [India]. 189 p. Illus.

Subtitled: Together with notes on British practice and suggestions for India based on a tour in North America in 1918. The author observed the Goodyear Lumber Co. at Elk, Calif.; he refers to the logging railroad, sky-line logging, and loading.

1319 MANARY, GORDON L. 1950. Harvesting the Forest Crop in the California Redwood Region. Western Forestry and Conserv. Assoc. 41:67-68.

Outline of logging practices as set forth by the Forest Practice Act.

1320 REDWOOD REGION LOGGING CONFERENCE. 1949. Proceedings, 11th Annual Meeting and

Equipment Show, Municipal Auditorium, Eureka, Calif., May 27-28, 1949. 53 p. Processed.

The only year for which the proceedings were published separately in bound form. Contents: Opening address, by Sherman A. Bishop; Making use of aerial photos in logging management, by H. A. Jensen; The statewide forest survey, by A. E. Wieslander; New federal and state legislation, by W. R. Schofield and D. Nelson; Administration of forest practice rules in the redwood district, by F. H. Raymond; Better forestry in the redwood region, by W. S. Rosecrans; Slash disposal in relation to the future crop, by L. Wambold; Characteristics of wood requirements for fibre-board products, by C. L. Morey; Characteristics of wood required for masonite products, by R. G. Wagner; Charcoal and chemicals from redwood wastes, by P. M. Cook; A practical approach to accident prevention, by D. Bendorf; The small operator's problems, by E. J. Lessard, K. Steele, and A. S. McCurdy; Radio in logging, by E. L. Surdam; Bark peeling, by T. Prentice; Where are we heading for future supplies of lumber? by W. T. Hannum; Self-contained loading machines, by G. Frink; Mobile type loaders for redwood, by M. Peirce; Servicing tractors, by D. Uhl; Hard-facing alloys for increasing wear resistance, by R. A. Larson; High speed diesel engines, by A. S. Leonard; Firm memberships and official representatives; Individual memberships; Exhibitors.

1321 REDWOOD REGION LOGGING CONFERENCE. 1950. Proceedings, 12th Annual Meeting. Eureka, Calif., May 26-27, 1950. In MS. form. Only copy in Forestry Library, Univ. of Calif., Berkeley.

Incomplete record. See *Timberman*, July 1950, p. 36-40, and *Lumberman*, July 1950, p. 56-62 for trade press reports.

1322 REDWOOD REGION LOGGING CONFERENCE. 1951. Proceedings, 13th Annual Meeting, Eureka, Calif., May 25-26, 1951. In MS. form. Only copy in Forestry Library, Univ. of Calif., Berkeley.

Theme: What Becomes of the Tree? Contains copy of program and copies of prepared papers; clippings from trade press and Eureka newspapers giving selections from discussions.

Subjects covered: What Becomes of the Forest? by Wm. S. Rosecrans; Progress of the Tree Farm Program, by S. A. Bishop; Outline for panel on What Becomes of the Tree?; Logging Losses in Redwood (2 tables), by E. Fritz; Data on What Becomes of the Tree [from a painted backdrop panel on stage (see photo of Directors)]; Photo of discussion panel on What Becomes of the Tree?; Planning to Stay Free (banquet address), by K. Smith; A Look at the 1950 Fire Season, by F. H. Raymond; The Highways and the Economy, by J. J. Worley; R.R.L.C. Resolutions.

Lumberman. July 1951. What Becomes of the Tree? Report on the conference with selections from discussions.

Timberman. July 1951. Redwood Region Logging Conference. Report with selections from discussions.

Humboldt Times. May 26, 1951. News report on conference.

1323 REDWOOD REGION LOGGING CONFERENCE. 1952. Proceedings, 14th Annual Meeting, Eureka, Calif., May 23-24, 1952. In MS. form. Only copy in Forestry Library, Univ. of Calif., Berkeley.

Theme: What's New in Selective Cutting? Contains copy of program, photo of Directors, copies of prepared papers, clippings from trade press and Eureka newspapers giving selections from addresses and panel discussions.

Subjects covered: Hammond's Selective Cutting Experiment on Yarder Settings, by G. G. Evans; Selective Cutting as Practiced by Pacific Lumber Co., by N. Gillam; Loggers' Contribution to [closer] Wood Utilization, by A. T. Walton; The Forest Practice Act —Compliance and Amendments, by F. H. Raymond; An Editor Looks at the Industry, by A. Arnst; Outlines for panel discussions on "Relations Between Woods and Mill" and Highway Trucking; Directors, R.R.L.C.; Statement to Legislative Committee and Highway Commission, "Redwood Region Public Roads Traffic Problems and their Solution."

Timberman. July 1952. R.R.L.C. proceedings; selections from talks.

Lumberman. July 1952. Redwood Region Loggers; selections from talks.

1324 REDWOOD REGION LOGGING CONFERENCE. 1953. Proceedings, 15th Annual Meeting. Eureka, Calif., May 22-23, 1953. In MS. form. Only copy in Forestry Library, Univ. of Calif., Berkeley.

Contains copy of program, copies of prepared papers, clippings giving selections from the discussions, photo of Directors.

Subjects covered: Financial Problems of Logging, by L. D. Coolidge; President's Address, by R. G. Wagner; Welcoming Address, by M. Krei; Revisions in the Forest Practice Rules, by D. Nelson; Fire Protection—Progress and Needs, by A. H. Merrill; A Mutual Fire Protection Program, by L. T. Marshall; Banquet Address, by K. Ryerson; R.R.L.C. Resolutions.

Timberman. July 1953. Financial, Forestry, Protection and Safety Problems discussed. A staff writer's summation of the Conference.

Humboldt Times & Standard. May 22-24, 1953. News reports on Conference.

1325 REDWOOD REGION LOGGING CONFERENCE. 1954. Proceedings, 16th Annual Meeting. Ukiah, Calif., May 21-22, 1954. In part in MS. form. Only copy in Forestry Library, Univ. of Calif., Berkeley.

Contains copy of the program and copies of prepared papers, clippings from trade press and Ukiah newspapers, photographs of Equipment Show, and Directors.

Subjects covered: Address of Welcome, by E. E. Stafford; President's Address, by G. G. Evans; Lumber Production and Forest Resources of Mendocino County, by R. H. May; Permanent Forests and Industries for Mendocino County, by C. R. Johnson; Improving Your Safety Record, by H. E. Neville; Your Highway, by W. H. Sandelin; R.R.L.C. Resolutions.

Pacific Logger. July 1954. Extensive excerpts from addresses and discussions.

Lumberman. July 1954. Selected excerpts from discussions.

Timberman. July 1954. Selected excerpts from discussions.

Ukiah News, Ukiah Journal, and *Humboldt Times.* Clippings bearing on the meeting.

1326 REDWOOD REGION LOGGING CONFERENCE. 1955. Proceedings, 17th Annual Meeting, Eureka, Calif., May 20-21, 1955. In part in MS. form. Only copy in Forestry Library, Univ. of Calif., Berkeley.

Contains copy of program, copies of prepared papers, photographs, and clippings from trade press and local newspapers.

Subjects covered: Address of Welcome, by G. C. Jacobs; Greetings from County Supervisors, by E. Shortgren; President's Address, by L. T. Marshall; The Stanford Report on America's Demand for Wood, 1925-1975, by C. E. Young; Outlook for the Redwood Region, by K. Smith; Salvage Logging, by W. MacPherson; Plan for Small Ownership Panel Discussion, by F. W. Riley; Status of Standing Tree Insurance for Tree Farmers, by J. B. Wright; Public Timber's Contribution to the North Coast Economy, by W. W. Spinney; President's memorandum for introductions and comments, by L. T. Marshall.

Lumberman. June 1955. Permanence is discussed. Clipping reporting the Conference.

Pacific Logger. July 1955. Extended review of proceedings.

Timberman. July 1955. Clipping reporting the Conference.

Bates Bernarr. 17th Annual R.R.L.C. Draft for news release.

Humboldt Times. May 19-22, 1955. Clippings reporting the Conference.

1327 SMITTER, WESSEL. 1950. How PALCO Logs Redwoods. *Wood*

[*Wood and Wood Products*]. 5:19, 39-41. July 1950. Illus.

Brief account of the logging operations of The Pacific Lumber Co.

1328 SNYDER, STEWART M. 1938. Redwood Logging: Planning a Production of 220,000 Feet Per Day. *Timberman.* 39:16-17. Sept. 1938. Illus.

Description of operation of Dolbeer & Carson Lumber Co. camp at Eureka, Calif., including the use of topographic maps.

1329 WAGNER, ROY G. 1942. An Analysis of the Stand Structure and Cutting Economics on the Glen Blair Unit of the Union Lumber Company Timberlands. U.S. Forest Serv., San Francisco. 140 p. Nov. 1, 1942. Tables, maps. Processed.

A thorough scientific study of the economics of selective cutting. Much basic data pertaining to diameter and volume distributions, stand structure, stands per acre, log and tree grades, logging costs, cutting methods, returns based on mill tally and lumber prices, depletion for tax purposes, etc.

1330 WAGNER, ROY G. 1941. An Analysis of the Stand Structure and Cutting Economics on the Jordan Creek Project Unit, Eel River Block, of The Pacific Lumber Company Holdings. U.S. Forest Serv., San Francisco. 192 p. Aug. 1, 1941. Tables, maps. Processed.

A very detailed scientific cooperative study of the economics of selective cutting. Covers stand structure, cutting practices, timber estimates, tree and log grades, costs of logging items, returns based on lumber tally, lumber prices, etc. The project area was to have been logged with tractors but World War II exigencies demanded a return to slack-line yarding.

Felling and Bucking

1331 ANON. 1951. Chopping Boss. *Simpson Lookout.* Simpson Logging Co., [Shelton, Wash.] 5:2, 11. June 1951. Illus.

Describes the felling of redwood and contains a photograph of a large felled tree, scaling 70,000 feet.

1332 ANON. 1934. Felling Timber with Power Saws. *Timberman.* 35:11-13, 26. July 1934. Illus.

A general article; includes notes on the use of power saws in the redwood region.

1333 ANON. 1940. Fitting Redwood Felling Saws. *Timberman.* 41:42-44. Feb. 1940. Illus.

Article refers to blades for power felling saws. This article is in the section "In the Redwood Region," and there are other notes on truck logging, unit stacking, and planing mills.

1334 ANON. 1937. Power Felling Saws in the Redwoods. *West Coast Lumberman* [*Lumberman*]. 64:33, 81. May 1937. Illus.

Illustrated note on gas-engine driven felling saws.

1335 ANON. 1943. Power Saw Drops Giant Redwood at Union [Lumber Co.] Camp. *Timberman.* 44:88, 102. June 1943. Illus.

A twelve-ft. and a ten-ft. blade were spliced in order to fell a redwood whose diameter was 21 ft., 2 inches at the stump, total height 334 ft. The scale was computed at 140,800 feet by Spaulding scale. An 18-ft. section of this tree was set up at the Company's office at Fort Bragg as a memorial to C. R. Johnson.

1336 ANON. 1948. Power Sawing in the Redwoods. *West Coast Lumberman* [*Lumberman*]. 75:106. March 1948. Illus.

Description of the Caspar Lumber Co. operation.

1337 ANON. 1939. Power Saws Used 100 Per Cent in Big Redwood Operation. *West Coast Lumberman*

[*Lumberman*]. 66:14-15. March 1939. Illus.

Article describing the gasoline drag saws used by The Pacific Lumber Co. since 1929 for felling trees.

1338 ANON. 1953. A Redwood Topples. *Colliers.* 131:38-39. March 21, 1953. Illus.

Brief article to accompany 7 color photographs by Gene Trindl. The photos and material are of a tall standing trunk, chain saw felling and lengthwise ripping of Sierra redwood, but the same methods shown would apply to Coast redwood.

1339 ANON. (George Craig.) 1954. Ripping Large Redwood Logs Pays Off. *Timberman.* 55:57-60. April 1954. Illus.

Describes ripping operations of the Simpson Logging Co. and the Hammond Lumber Co.

1340 ANON. 1949. The Story of Felling and Processing California's Giant Redwoods. *Interlock News,* Weather-Seal, Inc., Barberton, Ohio. p. 6-11. June 1949. Illus.

Descriptive and pictorial treatment in a house publication.

1341 BOWER, H. I. 1936. Redwood Falling and Bucking. *Timberman.* 37: 28, 30. Oct. 1936.

Describes the methods and equipment used.

1342 BUELL, CRAWFORD R. 1931. Factors in the Cost of Felling Redwood. *Timberman.* 32:19-20, 86, 88. Oct. 1931. Illus.

Subtitled: An Analysis of the several wage incentive plans which have been tried in California. The factors which affect the cost of felling redwood are complex. The three important administrative factors considered in this paper are: 1. method of wage payment, 2. supervision of the fallers, 3. treatment of personnel by employer. Usually in cost accounts the factors are composed of: 1. felling the trees, 2. peeling bark from the trees, 3. burning the debris. The few larger companies normally spend a quarter of a million dollars for the felling, peeling and burning, this amounting to 15 per cent of the total cost from the stump to the pond. Felling, which is treated in this study, uses three methods of wage payment: 1. by an hourly or daily rate, 2. by a contract system of piece work, and 3. by a bonus system. The bonus system, though it may be a little more expensive, appears to be the best in the long run.

1343 BUELL, CRAWFORD R. 1930. Supervision of Felling and Bucking. *Timberman.* 31:78-80. Feb. 1930.

Remarks on the need for supervision in the Pacific Greater West with especial reference to the redwood region. Reasons for close supervision are the distance between workers as well as from the boss; the care needed to prevent breakage; and under the general piece rate wage payment plans, the quality must be maintained. The types of supervision are discussed.

1344 DEMILLE, GEORGE, and RALPH TODD, Jr. 1949. Falling Redwood "Outlaws." *Timberman.* 51:42-43. Nov. 1949. Illus.

Describes the felling of difficult redwood trees. Copied from Union Lumber Company's *Noyo Chief.*

1345 SMITTER, WESSEL. 1945. Down Goes a Redwood Tree! *Sat. Evening Post.* 217:24-26, 129-130. Nov. 10, 1945. Illus.

Description of felling a large redwood, excellently illustrated with color photos. The article may give the impression that three men are required for felling and that bulldozers are always used for preparing the layout. Photographs were taken on Hammond Lumber Company's Maple Creek operations in the summer of 1945.

1346 WIRT, WILLIAM H. 1932. A Successful Method of Power Felling. *J. Forestry.* 30:62-64. Jan. 1932. Illus.

The use of modified gas-driven power saws in felling and bucking of redwood by The Pacific Lumber Co., resulting in less breakage and improved salvage, and an estimated 30 per cent speed up in the felling of large trees. Illustrations show the saw doing both felling and bucking operations.

Also in *Timberman*, 32:27, 90-91, Sept. 1931, with title "Falling and Bucking with Power Saws."

Yarding and Loading

1347 ANON. 1922. Aerial Logging in the Redwoods. *Timberman*. 23:144. Aug. 1922.

An outline of the progress made with the R. T. Bourns overhead logging system at the Carlotta, Calif. camp of the Holmes-Eureka Lumber Co.

1348 ANON. (Sam Hawkins.) 1936. "Caterpillar" Logging in Monument Creek. *West Coast Lumberman* [*Lumberman*]. 63:64. Nov. 1936.

A trade journal reporter's notes on a visit to The Pacific Lumber Company operation.

1349 ANON. 1940. Combination Donkey and Tractor Logging. *West Coast Lumberman* [*Lumberman*]. 67:34. Aug. 1940. Illus.

Description of logging on the Monument Creek operation of The Pacific Lumber Co., Scotia.

1350 ANON. 1935. Declines and Inclines in Logging California Redwood. *West Coast Lumberman* [*Lumberman*]. 62:10-11, 30. Nov. 1935.

Methods employed and men who log for Hammond & Little River Redwood Company. (The Hammond Lumber Co. was merged with Little River Redwood Co.; later the name became Hammond Redwood Co., and then again Hammond Lumber Co.)

1351 ANON. 1936. Early Redwood Logging. *Timberman*. 37:59. March 1936. Illus.

Brief article noting the first steam logging was introduced by Dolbeer with a side spool donkey engine used on Salmon Creek in 1881; a three-wheel tractor was used in 1915; the first bull donkey was invented in 1891 by D. Evans and used near Freshwater. Drawing of the original Dolbeer donkey as shown by the patent papers dated 1882.

1352 ANON. 1955. How's Your Pioneer Instinct? *Sat. Evening Post*. Oct. 22, 1955.

A feature, displayed in a "box," picturing an old wagon jack, from which the hand-logging jack of early days might have been developed, or vice versa.

1353 ANON. 1951. Increasing Log Production by Modern Loading Equipment. *Lumberman*. 78:68, 116. June 1951. Illus.

Description of heel-boom Trakloader loading logs on to off-highway log trucks capable of hauling 100-ton loads.

1354 ANON. 1911. Logging Redwood. *Amer. Lumberman*. 1885:45. July 1, 1911.

Brief note on the use of the three-drum donkey, the value of the machine and its dimensions.

1355 ANON. 1935. Logging Redwood with Tractor and Yarder. *West Coast Lumberman* [*Lumberman*]. 62:6-7. April 1935. Illus.

1356 ANON. 1936. Redwood Fixed Skyline Logging. *West Coast Lumberman* [*Lumberman*]. 63:52. Aug. 1936. Illus.

News note on logging methods of the Union Lumber Company. Two photographs show the rigging and also how cutover land will look. The system devised makes good fire breaks and preserves young growth from damage.

1357 ANON. 1936. Redwood Tractor Logging in Steep Ground. *West Coast Lumberman* [*Lumberman*]. 63:16, 18. March 1936.

An outline of the methods and results of The Pacific Lumber Company.

1358 ANON. (Emanuel Fritz.) 1935. Tractor Logging in the Redwood Region. *Timberman.* 36:30. July 1935.

Extracts by the Editor from a report by E. Fritz to the Calif. Redwood Assoc. on the use of tractors.

1359 ANON. 1940. Two-Donkey Slackline Flyer. *Timberman.* 41:49. Feb. 1940. Illus.

Description of the Holmes-Eureka Lumber Company's operation 12 miles east of Carlotta.

1360 ANON. 1940. Winter Logging. *Timberman.* 41:40. March 1940. Illus.

Pictures of tractor logging in water and mud at the Union Lumber Co., Fort Bragg.

1361 ANON. 1938. Yarding and Loading Redwood by Telephone. *Timberman.* 40:12-15, 18. Nov. 1938. Illus.

A description of the Lawson double skyline system of yarding and loading at Rockport Redwood Co., Rockport, Calif., and other notes on the company's operation.

1362 BOURNS, R. T. 1920. Lawson Overhead Yarding and Loading System. In *Eleventh Session Pac. Logging Cong. Proc.*, p. 7-8. Illus.

Development and first use of an overhead yarding system which holds the log well in the air. Complete discussion of methods and problems, as practiced at the Goodyear Redwood Co., Elk, Calif.

1363 FRITZ, EMANUEL. 1937. Tractor Advantages in the Redwood Region. *J. Forestry.* 35:919-928. Oct. 1937.

Covers the advantages for reduced logging costs, and "at the same time, immature trees are saved for future growth and the cutover land is left in more favorable condition for natural reforestation."

1364 GRAY, M. D. 1928. Conversion of Steam Yarder to Diesel Power. *Timberman.* 30:56. Nov. 1928.

Union Lumber Co. finds diesel engine satisfactory in logging redwood timber.

1365 HALLIN, WILLIAM. 1937. Redwood Tractor Yarding Costs as Affected by Slope Gradient and Load Volume. U.S. Forest Serv., Calif. Forest and Range Expt. Sta. Forest Research Note No. 16. June 4, 1937. 4 p. Tables. Processed.

Also in *Timberman,* 38:103, June 1937.

By means of graphs this report shows how costs are affected by different degrees of slope and different footages per load. Presented for the first time at the second Redwood [Region] Logging Conference, June 11, 1937.

1366 HERRICK, BERTHA F. 1899. The California Redwoods. *Land of Sunshine.* 11(2):95-101. July 1899. Illus.

Coast redwood somewhat confused with Sierra redwood; names of famous trees given. Very condensed account of logging, particularly the hauling of logs.

1367 PERCY, E. H. 1932. New Double Drum Tractor Attachment. . . . *Timberman.* 33:21. Sept. 1932.

Subtitle: Mechanical staff of Union Lumber Company develops heavy duty yarding unit for redwood logging work.

1368 PERCY, E. H., and H. W. GRAY. 1933. Tractor Logging in the Redwoods. *Timberman.* 34:22, 24, 37. July 1933. Illus.

Article on the advantages of tractors as used by the Union Lumber Co., which pioneered their use.

1369 PERSON, HUBERT LAURENCE. 1937. Comparative Costs for Slackline, High-lead and Tractor Yarding, Redwood Region. U.S. Forest Serv., Calif. Forest and Range

Expt. Sta. Forest Research Note No. 15. June 4, 1937. 5 p. Table. Processed.

Also in *Timberman,* 38:74-76, July 1937.

Report based on an examination of three operations in each kind of logging. Cost figures are given in tables and graphs. The totals compare as follows for yarding alone, including labor, fuel, wire rope, depreciation, interest, etc.: Tractors, $1.131 per M; Slack line, $1.613 per M; High-lead, $1.629 per M. This report was presented for the first time at the second Redwood [Region] Logging Conference, June 11, 1937.

1370 PERSON, HUBERT LAURENCE. 1935. Redwood Uphill Tractor Logging. *West Coast Lumberman* [*Lumberman*]. 62:24-25. Oct. 1935. Illus.

1371 STAMM, E. P. 1930. Lowering Trees to Prevent Breakage. *Timberman.* 31:39. Jan. 1930. Illus.

Use of the overhead slackline system by the Goodyear Redwood Lumber Co. in lowering trees; particularly adapted to irregular canyon country. Drawing illustrates the operation.

Log Scaling and Grading

1372 ANON. 1950. Grading Rules for Redwood Logs. *Timberman.* 51:64. Aug. 1950. Illus.

Describes log grades adopted by the Holmes Eureka Lumber Co. for purchased logs.

1373 ANON. 1956. Redwood Log Grades Developed. *Timberman.* 57:90-91. Sept. 1956.

Presents specifications prepared by Peter Culkin for grades of redwood logs for Mendocino and Sonoma counties.

1374 BUELL, CRAWFORD R. 1932. Factors in the Scaling of Redwood Logs. *Timberman.* 33:24, 26, 28. Jan. 1932.

Scaling redwood logs is difficult because the logs are large and of irregular shape. When a single diameter is employed in scaling, the errors in the long run do not tend to equalize since the logs tend to fall or lie on their flat sides.

1375 BUELL, CRAWFORD R. 1929. Redwood Check Scaling. *Timberman.* 30:61-62. May 1929. Table.

Description of the scaling method and check scaling by the same procedure as instituted by the Hammond Lumber Co. at Samoa, Calif., in August 1928.

1376 BUELL, CRAWFORD R. 1929. Relation Between Various Scales in Redwood Logging Operations. *Timberman.* 30:156, 158, 160. June 1929. Tables.

For board foot contents. Tables summarize and compare scales (Spaulding) for chopping, sawing, and car scales; sawing and car given in both gross and net.

1377 FRITZ, EMANUEL. 1936. Log Scaling Practices in the California Redwood Region. *Timberman.* 37: 14-15, 18. June 1936. Illus.

Also in Log Scaling, *Timberman,* Portland, Oregon, 1936, p. 86-90.

Describes methods of scaling; lack of standard in methods and of log rule used; comments on "Humboldt Scale"; defects to be scaled out; scaling with reference to cruising.

Breakage and Other Losses

1378 ANON. (Stuart Leete.) 1940. Redwood Breakage Reduced. *West Coast Lumberman* [*Lumberman*]. 67:20, 22. May 1940. Illus., tables.

Description of Caspar Lumber Company's method of paying choppers to encourage reduction of felling breakage. Pay scales are given.

1379 FRITZ, EMANUEL. 1948. An Analysis of Wood Losses in Redwood Logging. *Forest Prod. Research Soc. Proc.* 2:24-30. Tables.

Analysis based on a 29-acre area in

Humboldt County, "containing originally 4,099,788 b.f. of sound merchantable lumber, or 141,170 b.f. per acre, the operating losses of originally merchantable contents totaled 43,270 b.f. per acre. After fire-proofing the area, there remained 96.6 cords of sound but surface-charred wood per acre, all of it suitable for conversion by some chemical means into other products. Bark alone totals 23.6 cords per acre." Sources of loss are due to felling breakage, crushed logs, unmerchantable logs, missed merchantable logs, tops of merchantable trees, limbs, bark, stumps, and all the smaller unutilized trees. Discussion by Harry F. Lewis on utilization of mill waste, p. 29-30. A condensation of No. 1381.

1380 FRITZ, EMANUEL. 1938. Breakage Reduction in Felling Redwood. *Timberman.* 39:17-18, 20, 21. Jan. 1938. Illus., tables.

Also in *J. Forestry,* 36:405-410, April 1938.

Data on the amount of breakage and the methods of one operator to reduce his breakage.

1381 FRITZ, EMANUEL, and CRAWFORD R. BUELL. 1936. An Inventory of Volume Losses in Logging Redwood. Calif. Redwood Assoc., San Francisco. July 20, 1936. 7 p. Processed.

Gives in tabular form the results of a study made in 1928-1929 of a high-lead and slack-line operation in Humboldt County, showing losses of sound merchantable material due to felling breakage, fire damage, and other logging damage. Written explanation and analysis of the columns in the table.

1382 KIMMEY, JAMES W., and E. M. HORNIBROOK. 1952. Cull and Breakage Factors and Other Tree Measurement Tables for Redwood. U.S. Forest Serv. Calif. Forest and Range Expt. Sta., Berkeley. May 1952. 28 p. Illus., map, tables. Processed. (Its Forest Survey Release No. 13.)

Refers to young- and old-growth cull for decay, breakage, and other losses. See also No. 1377.

Debarking

1383 ANON. 1949. New Barking Machine at California Barrel [Company]. *Redwood Region Logging Conf. Bul.,* Brizard-Matthews Machinery Co., Eureka, Calif. p. 9. Illus.

Description of the Prentice debarking machine, installation and operation.

1384 ANON. 1955. Redwood Bark Moved by Fork on Tractor. *Timberman.* 56:57. Oct. 1955. Illus.

Brief article describing a tractor with a front-mounted fork for removing bark debris from the debarking area, replacing the sling system formerly used by Simpson Logging Co., Klamath, Calif.

1385 ANON. (George Craig?) 1954. Redwood Bark Problem Solved with Hydraulic Barker System. *Timberman.* 55:49-52. June 1954. Illus.

Descriptive of the debarker at the Union Lumber Co., Fort Bragg, Calif.

1386 ANON. 1956. Redwood Power Peeler. *Pacific Logger.* 3(10):56. July 1956.

Describes R. E. Burton's compressed air operated hand-directed bark peeling bar.

1387 BURTON, ROBERT EDWARD. 1950. A Study of the Problems Related to the Peeling of Bark from Second Growth Redwood. Berkeley, Calif. 52 p. Illus., tables. Processed.

Thesis (M.S.) — Univ. of Calif. June 1950.

The author investigated bark removal and devised machinery for debarking logs.

1388 McGUIRE, KELLY. 1942. New

Method of Peeling Redwood Logs. *West Coast Lumberman* [*Lumberman*]. 69:24. May 1942. Illus.

Centralized peeling at a woods landing. Sketch showing how logs are unloaded from trucks and where they are barked.

1389 PARKS, WALTER H. 1955. Economics of Debarking Redwood Logs. *Forest Products J.* 5:317-322. Oct. 1955. Tables, biblio.

"Presents information available on suitable methods for whole log debarking of redwood logs, and evaluates benefits that may result. The results show that value derived from whole log debarking more than offsets cost of any methods studied. Hand barking at prepared mill landing is most economical for mills with daily production of 200 M bd.ft. per day or less, hydraulic debarkers promise to be more economical for higher daily production levels." Tables summarize cost data for hand, hydraulic, and mechanical debarking. List of literature cited. Paper presented at the Annual Meeting of Forest Products Research Society, June 21, 1955.

1390 PARKS, WALTER H. 1953. Log Barking: Hand Barking Redwood Logs. Calif. Redwood Assoc., Redwood Research Rpts. Research Project 3.11310-A. [10] p.

Economic comparison of the different methods used in hand barking of redwood logs.

1391 RADTKE, PAUL. 1937. Peeling Redwood Logs. *West Coast Lumberman* [*Lumberman*]. 64:68. Sept. 1937. Illus.

Author describes how redwood logs might be handled for peeling at the mill. Illustrated with diagram.

1392 TALLMAN, J. J. 1951. Sawmill Problems in the Redwood Area. *Lumberman.* 78:95-96. Jan. 1951.

Problems due to debarking at the pond and as a result of the long lengths hauled for bucking at the mill.

Transportation of Logs

1393 ANON. (Sam Hawkins.) 1936. Cost of Trucking Redwood. *West Coast Lumberman* [*Lumberman*]. 63:30. Nov. 1936. Illus.

Gives itemized cost data from contract log haulers on the Van Duzen River. Cost runs between $0.155 and $0.168 per mile, for 4 trucks (Ford V8), 9-mile haul.

1394 ANON. 1890. The Experiment of Towing Logs and a Description of Constructing the Raft. *The Arcata Union*, Arcata, Calif. 5 (8) :2. Sept. 20, 1890.

This issue also contains an article: Humboldt Co. Exhibits at the State Fair, p. 3.

1395 ANON. 1950. Herculean Truck Road Job. *Timberman.* 51:51-52, 113. July 1950. Illus.

Tells how Union Lumber Co., Fort Bragg, converted 22 miles of railroad bed to a truck road in 22 days.

1396 ANON. 1940. Inclines and Declines. *West Coast Lumberman* [*Lumberman*]. 67:30-32. Aug. 1940. Illus., map.

Description of Hammond Redwood Lumber Co. operation on Maple Creek; logging in rough country. Topographic map of area.

1397 ANON. 1889. The Industry of Towing Redwood Rafts. *The Arcata Union*, Arcata, Calif. 4 (5) :3. Aug. 31, 1889.

Steamer "Emily" sails with large cargo and log raft, bound for San Francisco.

1398 ANON. (Stuart F. Leete.) 1939. Largest Redwood Truck Show. *West Coast Lumberman* [*Lumberman*]. 66:36-38. May 1939. Illus.

Description of log trucking by Anderson and Jackman, Carlotta, Calif. for Holmes Eureka Lumber Co.

1399 ANON. (George Craig.) 1951. Rail Logging Ends at Santa Cruz. *Tim-*

berman. 52:88. Oct. 1951. Illus.

Brief article on the change from railroad use to trucks by the Santa Cruz Lumber Co.

1400 ANON. 1880. The Storm. *Humboldt Times Daily*, Eureka, Calif. 14(153):3. Dec. 28, 1880.

Brought many logs out of the streams: Elk River and Mad River. Two thousand taken out of Ryan's Slough.

1401 ANON. (C. G. Sturm.) 1954. Timber Access Road. *Pac. Logger*. 2: 10-11, 22, 28. Nov. 1954. Illus.

Describes the log trucking road of the Kelley Development Co., Cloverdale, Sonoma County. 27 miles to tap 20,000 acres of redwood near Annapolis.

1402 ANON. 1936. Truck Hauling Redwood. *West Coast Lumberman* [*Lumberman*]. 63:16. Jan. 1936. Illus.

Notes on the use of tractors and trucks in redwood country, with some data as to lengths of haul, grades, outputs.

1403 ANON. (Stuart B. Leete.) 1941. Trucks Solve Problem. *West Coast Lumberman* [*Lumberman*]. 68:26, 29. May 1941. Illus., map.

Winter logging with trucks by the Union Lumber Co. in the rugged northern Mendocino area.

1404 EVANS, GRAY G., and others. 1954. Planning; Road Construction; Falling & Bucking; Yarding & Loading; Log Transportation. Proc. 45th Pacific Logging Congress, Oct. 25-27, 1954. Portland, Ore. 79 half tones.

The texts are transcripts of extemporaneous descriptions of photographic slides as they were shown, depicting operations in the redwood region. The speakers were: Gray Evans, Planning; Roy Wagner, Road Construction; Larry McCollum, Falling & Bucking; Henry Trobitz, Yarding & Loading; Larry Marshall, Log Transportation.

1405 FAIRBANKS, HAROLD W. 1903. California [supplementary volume of Tarr and McMurry Geography]. Macmillan, New York.

Sequoias in California, including manner in which the logs are taken to market, p. 20-22, 43-45, 62, 70, 108.

1406 HALLIN, WILLIAM. 1939. Redwood Railroad Transportation Costs, Mendocino County. U.S. Forest Serv. Calif. Forest and Range Expt. Sta. Research Note No. 20, Supp. No. 1. Nov. 30, 1939. 5 p. Tables. Processed.

Log and tree costs for ordinary flat cars. (Note: See W. Hallin, 1939, "Redwood Logging Costs in Mendocino County.")

1407 REDWOOD REGION LOGGING CONFERENCE. 1952. Redwood Region Public Roads Traffic Problems and Their Solution. Statement by the Directors . . . to Legislative Highway and Transportation Committees and State Highway Commission. San Francisco. Sept. 13, 1952. 5 p. Processed.

Statement on the heavy traffic problem, with particular reference to trucks hauling logs and other materials, and the need to improve the situation.

MILLS AND MILLING

General

1408 ANON. (Stuart Leete.) 1939. Active Year Ahead for Redwood Circulars. *West Coast Lumberman* [*Lumberman*]. 66:30-31. May 1939. Illus.

News notes on several small circular mills in Mendocino, Humboldt and Lake counties.

1409 ANON. (Sam Hawkins.) 1938. Among the Navarro Mills. *West Coast Lumberman* [*Lumberman*]. 65:68. April 1938.

Ten small mills described briefly.

1410 ANON. 1916. Among the Redwoods. *Timberman.* 17:40-43. June 1916. Illus.

Description of the mills and operations, including output and export from the following towns: Eureka, Arcata, Willits, Crescent City, Brookings (Oregon), and Requa.

1411 ANON. 1927. Bayside Redwood Company Completes Electrification. *Timberman.* 28:150. March 1927.

Account of the modernization of the Eureka plant.

1412 ANON. 1942. Bending Their Efforts to War Endeavor. *West Coast Lumberman* [*Lumberman*]. 69:34-35, 70. June 1942. Illus.

News note on new small mills in the redwood region of Sonoma County.

1413 ANON. 1942. Big Mill Idle for Ten Years Resuming. *West Coast Lumberman* [*Lumberman*]. 69:38. Aug. 1942. Illus.

News note on the rehabilitation of the Northern Redwood Lumber Co. at Korbel, Calif.

1414 ANON. 1932. California Mills. *Timberman.* 33:80. June 1932.

New plant of the Trinidad Redwood Co. has booked orders for 4,000,000 feet of structural redwood for the state.

1415 ANON. 1953. Efficient Mill Close to Large Supply of Timber. *Timberman.* 54:196. Jan. 1953. Illus.

Describes the Wolf Creek Timber Co., Inc., Jackass Creek operation in northwestern Mendocino County.

1416 ANON. 1875. The Evans Mill. *Humboldt Times Daily,* Eureka, Calif. 4(99):3. Oct. 24, 1875.

"This mill does more work for its size than any in the state."

1417 ANON. 1944. Farm Forestry. *Timberman.* 45:23-24, 28. Aug. 1944. Illus.

Describes a small sawmill operation near Corralitas, Santa Cruz County, cutting second-growth redwood.

1418 ANON. 1939. First 1939 Redwood Mill. *West Coast Lumberman* [*Lumberman*]. 66:34. March 1939. Illus.

Description of the opening of the mill of Juan Creek Redwood Co. near Westport in Mendocino County.

1419 ANON. 1938. Hammond Redwood Mill 2. *West Coast Lumberman* [*Lumberman*]. 65:50. Dec. 1938. Illus.

News note on the new mill at Eureka, Calif.

1420 ANON. 1875. Local Matters. *Humboldt Times Daily,* Eureka, Calif. 3(118):3. May 18, 1875.

"The steam whistle of Falk & Miner's—now Falk & Chandler's—new sawmill near Arcata, sounded its first note on Friday of last week, signifying that preparations were nearly complete for making an attack upon the dense and magnificent forest of redwoods in the immediate presence of which it is located.

1421 ANON. 1875. Local Matters. *Humboldt Times Daily,* Eureka, Calif. 3(132):3. June 3, 1875.

"The 'Jolly Giant' saw mill of Falk, Harrington & Co., near Arcata, commenced making lumber yesterday. The event was signaled by the blowing of the whistle, which was answered by the 'Dolly Varden' mill, which belongs to the same firm. It is said to work admirably, as it was sure to do, under the skilled direction of Mr. N. Falk, who superintended its construction."

1422 ANON. 1875. Local Matters. *Humboldt Times Daily,* Eureka, Calif. 3(133):3. June 4, 1875.

The West Coast Star says that last year the Noyo Mill sawed an average of 40,000 feet of lumber per day. The average for the last three months has been 42,000 feet a day.

1423 ANON. 1854. The Lumber Business at Humboldt. *Alta, California,* San Francisco. 5 (263) : 2. Sept. 22, 1854.

Table of mills, their equipment, investment and number of workmen employed.

1424 ANON. 1875. Lumber Mills in Mendocino County. *Humboldt Times Daily,* Eureka, Calif. 4 (97) : 3. Oct. 22, 1875.

List of mills, their output and number of employees.

1425 ANON. 1889. Lumbering in Humboldt. *Humboldt Times Daily,* Eureka, Calif. 32 (99) : 3. Oct. 26, 1889.

Description of various steps in lumbering. Description of an insect (borer) discovered making its way into a block of redwood scantling.

1426 ANON. 1954. Making a Circular Mill Cut 100,000 Feet Per Shift. *Timberman.* 55: 48-49. July 1954. Illus.

Description of the Hollow Tree Lumber Co., Ukiah, Calif. Photographs of equipment, diagram of floor plan.

1427 ANON. 1948. Modernization Increases Output About 20 Per Cent. *West Coast Lumberman* [*Lumberman*]. 75: 57-59, 123. Aug. 1948. Illus.

Article on the modernization of the planing mill of The Pacific Lumber Co., Scotia, Calif. Includes material on equipment and processes, and a floor plan.

1428 ANON. 1940. Navarro Saw Mills Humming. *West Coast Lumberman* [*Lumberman*]. 67: 38, 41-42. May 1940. Illus.

Description of 7 small mills along the Navarro River in Mendocino County.

1429 ANON. 1955. New Mill to Cut Only Redwood. *Timberman.* 56: 58, 60. Oct. 1955. Illus.

Describes the new mill of Hulbert & Muffly, Inc., at Cloverdale, Calif.

1430 ANON. 1947. New Redwood Mill Model of Efficiency. *Timberman.* 48: 100-104. July 1947. Illus.

Description of the Willits Redwood Products Co. Includes many photographs of the plant and equipment, and a diagram of the floor plan.

1431 ANON. (Stuart B. Leete.) 1941. New Redwood Planing Mill. *West Coast Lumberman* [*Lumberman*]. 68: 32e-32f. May 1941. Illus.

Brief description of the remodelled Union Lumber Co. mill at Fort Bragg.

1432 ANON. 1942. Progressive Small Redwood Mill. *West Coast Lumberman* [*Lumberman*]. 69: 42. July 1942. Illus.

Description of the Philo Lumber Co., Philo, Calif.

1433 ANON. 1953. Redwood Band Mill Built to Salvage Down Timber. *Lumberman.* 80: 60, 62. Feb. 1953. Illus.

Describes the new salvage mill of the Arcata Redwood Company near Orick, Calif.

1434 ANON. 1955. Redwood Logs Are Handled Safely and Efficiently. . . . *Lumberman.* 82: 86-87, 89. Aug. 1955. Illus.

Description of the "Herculift," a lift truck type of unit for handling logs, as used by Simonson Logging Co., Smith River, Calif.

1435 ANON. 1945. Redwood Mill Modernized. *Timberman.* 46: 44-46. Sept. 1945. Illus.

Describes the remodeling of the Hammond Lumber Co. Plant 2 at Eureka, Calif.

1436 ANON. 1944. Rehabilitated Redwood Mill Now Operating. *West Coast Lumberman* [*Lumberman*]. 71: 44-45. Oct. 1944. Illus.

Notes on the opening of the Northern Redwood Co. at Korbel, Calif.

1437 ANON. 1944. Rockport Redwood Again Going Strong. *West Coast Lumberman* [*Lumberman*]. 71:54, 56. June 1944. Illus.

Includes diagram of the layout of the new sawmill.

1438 ANON. 1940. Small Mills in the Redwood Region. *West Coast Lumberman* [*Lumberman*]. 67:22, 24. June 1940. Illus.

Describes Sturgeon sawmill, near Sebastopol, Sonoma County; Annapolis Lumber Co., Sonoma County; South Coast Redwood Co., Sonoma and Mendocino counties.

1439 ANON. 1942. Two New California Mills. *West Coast Lumberman* [*Lumberman*]. 69:60, 72. July 1942. Illus.

News item and description of the Ukiah Pine Lumber Co. and the Sage Land and Improvement Co. in Mendocino County, the latter a redwood mill. Diagrams are layouts of the planing mill and plant.

1440 ANON. (Sam Hawkins.) 1938. A Two-man Mill in the Redwoods. *West Coast Lumberman* [*Lumberman*]. 65:58. Sept. 1938.

Brief description of the Fidel & Young circular mill operation near Soquel, Santa Cruz County. See also No. 1448.

1441 ANON. (Sam Hawkins.) 1938. Unique Circular Mill. *West Coast Lumberman* [*Lumberman*]. 65:62. June 1938.

Description of the Tosch mill that was moved from Mendocino County to the Independent Lumber and Mill Co. on Waddell Creek, Santa Cruz County.

1442 CALIF. REDWOOD ASSOC. REDWOOD SAWMILL COMMITTEE. 1950+. Minutes. Calif. Redwood Assoc., San Francisco. Processed.

The Committee, made up of sawmill and technical personnel, ordinarily meets bi-monthly to discuss sawmill problems, including design and use of machinery, log handling and breakdown, saws, sawteeth, head saws, carriages, etc.

1443 FRITZ, EMANUEL. 1950. Chain Saws for Ripping Logs. The Pacific Logging Cong. *Logger's Handbook*. 10:83-85. Illus.

Describes the use of chain saws for splitting over-size logs and for salvaging clear cants from defective logs.

1444 McCLELLAND, J. G. 1937. Filing for Redwood. *West Coast Lumberman* [*Lumberman*]. 64:28. June 1937.

Describes filing of redwood band head saws.

1445 McCRACKIN, JOSEPHINE C. 1900. About the Big Basin. *Overland Monthly*. 36 (ser. 2):135-139. August 1900. Illus.

Some material on four mills in Santa Cruz County.

1446 THE PACIFIC LUMBER CO. 1950? From Out of the Redwoods. The Pacific Lumber Co., Scotia, Calif. [28] p. Illus.

A well illustrated brochure depicting the milling and preparation of redwood lumber at the Scotia plant.

1447 WILSON, R. C. 1937. The Utilization of Second-growth Redwood. [U.S. Forest Serv. Calif. Forest and Range Expt. Sta.] 7 p. May 1, 1937. Illus. Processed.

Describes the small Frost Mill on Trout Creek near Aptos, Santa Cruz County, producing mostly No. 2 and No. 3 common lumber from trees 40-50 years old. Photographs of trees, mill and the lumber cut.

1448 WILSON, R. C. 1937. Woodlot Forestry in the Redwoods. [U.S. Forest Serv. Calif. Forest and Range Expt. Sta.] 9 p. July 7, 1937. Illus. Processed.

Describes the Young & Fidel mill on Hester Creek near Santa Cruz, with small cut of mostly No. 2 and No. 3 common lumber. Photographs of the lumber and the plant. See also No. 1440.

Seasoning and Conditioning

1449 ANON. 1935. Air Seasoning Redwood. *West Coast Lumberman* [*Lumberman*]. 62:8-9. June 1935. Illus.

Methods employed to prevent end-checking; reduce handling cost and increase speed-up drying.

1450 ANON. 1955. End Check Preventatives Pay. *Timberman.* 56:68, 72. Oct. 1955. Illus.

Wax emulsion sprayed on the ends of redwood boards to reduce end checking during seasoning showed net savings of as much as $11.47 per thousand b.f. Article describes other coating treatments, and photos show the equipment used for spraying.

1451 ANON. 1955. Pre-driers Pay, Perform Well. *Timberman.* 56:92, 94. Dec. 1955. Illus.

Description, with photographs and diagrams, of the pre-drying operation at Warm Springs Redwood Co., Willits, Calif.

1452 ANON. 1949. Progress in Redwood Kiln Drying. *Redwood Region Logging Conf. Bul.*, Brizard-Matthews Machinery Co., Eureka, Calif. p. 10.

Brief report on the experimental work of the Calif. Redwood Assoc.

1453 CALIF. REDWOOD ASSOC. REDWOOD SEASONING COMMITTEE. 1948+. Experimental Data. Calif. Redwood Assoc., San Francisco. 3 vols. Illus., tables. Processed.

Three volumes of reports on experimental kiln drying and air drying of redwood lumber, mostly by B. C. Manson, one by D. W. Clayton, covering seasoning schedules, pre-air drying, effect of wood characteristics, drying rates, birds eye, etc.

1454 CALIF. REDWOOD ASSOC. REDWOOD SEASONING COMMITTEE. 1944+. Minutes. Calif. Redwood Assoc., San Francisco. Processed.

A continuing series of minutes of meetings and discussions on redwood lumber seasoning, its problems, techniques, schedules, etc. Includes air and kiln drying, effect of wood characteristics (specific gravity, birds eye, moisture content, etc.) on seasoning.

1455 CLAUSEN, VICTOR H. 1953. Air Seasoning of California Redwood. *J. of the Forest Products Research Soc.* 3:183-188. Dec. 1953. Illus., tables.

Also in *J. Forestry,* 52:933-935, Dec. 1954; similar material in Calif. Redwood Assoc., *Redwood Research Rpts.*, Research Project 3.21411, 9 p., 1953.

"A study was made of the effect which spacing between piles has on the factors which must be considered in planning and operating redwood air-drying yards. The results show that considerable savings could be realized by spacings much wider than were in common use. A comparison was also made between the cost of air drying and kiln drying to determine the point at which it becomes more economical to dry lumber in a kiln than in a yard." Drawings are of the arrangement of piles in the yard; tables give yard and kiln drying cost analysis.

1456 CLAUSEN, VICTOR H. 1953. Moisture Pickup. Calif. Redwood Assoc., Redwood Research Rpts. Research Project 3.51110-A. 3 p.

Procedure for determining the rate at which kiln dried redwood will absorb moisture under storage conditions.

1457 DAVIS, SAM. 1943. One Theory, with Restrictions. *West Coast Lumberman* [*Lumberman*]. 70:88. May 1943.

Relates to kiln drying of redwood, primarily for small mills.

1458 DAVIS, SAM. 1943. This Much We Know — We Think. *West Coast Lumberman* [*Lumberman*]. 69: 44, 46. Oct. 1943. Illus.

Description of experiment in kiln drying redwood to prevent brown stain.

1459 GREEN, C. BURDETTE. 1925. The Air Seasoning of Lumber in the California Pine and Redwood Regions. *Timberman.* 26:49-52; 226, 228, 230, 232, 234; 130, 132, 134-135. Oct./Nov./Dec. 1925. Illus., tables.

A comprehensive study of the common problems and the differences in air drying in both the pine and redwood regions. The objects of the study were "to reduce the loss from degrade . . . reduce the drying time without increasing degrade, or to determine the most profitable balance between these two factors . . . and to determine the influence of each of the major factors involved in the drying process and their correlation with each other. . . ." The following were studied: Piling methods; pile heights, widths, foundations and locations in the yard; segregation of stock; layers and thickness of the sticker; spacing of boards; vents; roofs; use of trams. The above are discussed in terms of comparison of methods and practices, results, and costs.

1460 LAMBERT, G. M., and W. E. PRATT. 1955. End Checking Preventatives. *Western Dry Kiln Clubs. Proc.* 7:50. April 1955.

Report of the Redwood Seasoning Committee's study of various methods of treatment of ends of boards to reduce checking in seasoning.

1461 LANE, L. W., and others. 1956. Quality Control of Moisture Content in Lumber Drying. Proc. 8th Annual Meeting, Western Dry Kiln Clubs. May 3-4, 1956. Berkeley, Calif. Processed.

H. E. Menkens, A. F. Peterson and W. E. Pratt, joint authors.

A statistical approach to quality control with particular reference to moisture content.

1462 MANSON, BYRNE C. 1949. The Drying of California Redwood. Calif. Redwood Assoc., Redwood Research Report No. 1. 8 p. [Research Project 3.20000-A.]

A summation of 3 years of experimental work by the Calif. Redwood Assoc. on the seasoning of Coast redwood.

1463 MANSON, BYRNE C. 1950. Quality Control and the Improved Seasoning Processes of the Redwood Industry. *Forest Products Res. Soc. Proc.* 4:29-35. Tables.

Recent test work in the drying of redwood shows that the highest quality results are obtained by air seasoning and then kiln drying under a schedule in which the drying rate is controlled. Proper segregation of the green lumber for air drying, proper air drying procedure, and certain kiln characteristics are essential for quality and economical work.

1464 PECK, E. C. 1928. Report on the Moisture Content of Lumber as Shipped from California Mill in the Summer. U.S. Forest Serv. Forest Prod. Lab., Madison, Wisc. Project L-252-5. Mimeo. R7. Sept. 1928. 24 p. Tables. Processed.

Report of tests on approximately 1560 various pieces of lumber from three redwood mills showed kiln dried varied from 1 per cent to 62 per cent with 90 per cent of the stock dried from 10 per cent to 46 per cent; air dried varied from 1 per cent to 65 per cent with 90 per cent below 18-27 per cent. Graphs and tables present results.

1465 PRATT, WILLARD E. 1953. Some Applications of Statistical Quality Control to the Drying of Lumber. Forest Products Research Society. *Paper presented* June 1953. 4 p.

Preliminary copy of a report to be presented at the Seventh Annual Meeting, June 1953, at Memphis, Tenn.

Simple applications of statistical quality control techniques to the control of the final moisture content of kiln dried lumber are described and illustrated.

1466 RANKIN, J. H. 1929. New Method Evolved for Kiln Drying Redwood on a Large Scale. *West Coast Lumberman* [*Lumberman*]. 56:18-19, 35. Oct. 1929. Illus.

Description of the use of forced air by cross draft fans at Hammond Lumber Co., Samoa, Calif.

Also reported in *Timberman,* 31:108, Dec. 1929.

1467 SHERMAN, HARRY. 1937. Yard Dryers for Redwood. *Timberman: Sawmill Engineering Supp.* 38:51. July 1937.

Brief description of the large dryers of the Hammond Redwood Co. at Samoa, Calif.

1468 SHERMAN, HARRY, and others. 1952. The Seasoning of Redwood. Annual meeting of Western Dry Kiln Clubs, Redding, Calif., May 2-3, 1952. 14 p. Processed.

Panel discussion of the Redwood Seasoning Committee, including the following papers: "Organization and history of Redwood Seasoning Committee" by Harry Sherman; "The relationship between Redwood Seasoning Committee and the California Redwood Association" by W. E. Pratt; "The physical properties and characteristics of redwood which affect drying" by I. G. Utschig; "Air seasoning around Humboldt Bay" by A. F. Peterson; "Experiments in yard spacing" by W. R. MacPherson; "Kiln drying of Calif. redwood" by Douglas Clayton; "Concluding remarks" by Harry Sherman.

1469 SPRINGBORG, OTTO. 1931. Kiln Drying in California. *West Coast Lumberman* [*Lumberman*]. 58:22-23, 33-34. Jan. 1931. Illus.

Description of the large volume, modern kilns at the plant of The Pacific Lumber Co., Scotia, and the methods employed in their care and operation.

1470 STEGEMAN, JOHN D. 1940. Density Segregation. *West Coast Lumberman* [*Lumberman*]. 67:30, 74. June 1940. Tables.

Sorting of the mill-run redwood product into three weight classes according to moisture content.

1471 STEGEMAN, JOHN D. 1943. Drying Lumber at Hammond Lumber Co. *Timberman.* 44:17-18. July 1943. Illus.

Describes the huge drykilns of the company and their operation.

1472 STEGEMAN, JOHN D. 1938. Kiln Drying Redwood. *West Coast Lumberman* [*Lumberman*]. 65:38, 66. Sept. 1938.

Description of kiln drying, with a number of questions and answers pertaining to problems such as staining, shrinkage, and waste control methods and costs.

1473 STEGEMAN, JOHN D. 1940. Operating Control. *West Coast Lumberman* [*Lumberman*]. 67:53. Sept. 1940.

Article on the operating problems in a large redwood mill, with reference to drying schedules of light and heavy stock, stain, and manufacturing processes.

1474 STEGEMAN, JOHN D. 1941. Some Things to Know About Redwood. *West Coast Lumberman* [*Lumberman*].68:66, 68. Dec. 1941.

Coarse-grained 1-inch redwood can be kiln dried in 9 days, while denser wood, with a high per cent of summer wood requires 37 days.

1475 UTSCHIG, I. G. 1935. Redwood Kiln Drying in California. *Timberman.* 36:16-17, 19-20. Sept. 1935. Tables.

Data on variation in drying redwood according to characteristics of the wood, and shrinkage, based on 15 years experience at the Union Lumber Co. Graphs illustrate the material.

Lumber Yard, Planing Mill, Shipping

1476 ANON. (George F. Cornwall.) 1941. Eliminating Bottlenecks with Carriers and Lifts. *Timberman.* 42:15-17, 68. Nov. 1941. Illus.

Well illustrated description of lumber handling at the plant of the Union Lumber Co. at Fort Bragg.

1477 ANON. 1940. Engineered Lumber Handling. *West Coast Lumberman [Lumberman].* 67:16, 18. June 1940. Illus.

A description of the change from hand piling to motor carrier and stacker by units at the Holmes-Eureka Lumber Company.

1478 ANON. 1939. Evolution of Carriers in Redwood Trade. *Timberman.* 40:70. Sept. 1939. Illus.

Includes three photographs, one of a schooner in 1865, two of modern steamers.

1479 ANON. 1931. Redwood Special is Longest Train Ever Moved Over Sierra. *Southern Pac. Bul.* 19:8-9. July-Aug. 1931. Illus.

Tells of a cargo of 3 million feet of lumber in 117 cars, on a transcontinental run from Benali Station, near Sacramento.

1480 ANON. 1918. San Francisco, California. *Amer. Lumberman.* 2243: 59. May 11, 1918.

Redwood situation improving, with more cars available, although not yet enough for the requirements of the eastern rail shippers. Heavy demand for common and merchantable continues; export inquiries more numerous. Ties in heavy demand.

1481 ANON. 1952. Simpson Opens Its New Redwood Processing Center. *Lumberman.* 79:52. April 1952. Illus.

Description of the plant and equipment of the Simpson Logging Co. mill at West Arcata.

1482 ARCATA & MAD RIVER RAILROAD COMPANY. Records, 1883-1927. 1 carton, 1 volume. MS. in University of California, Bancroft Library, Berkeley.

The records include correspondence and accounts of the private railroad connecting Korbel (Humboldt County) with the Coast and N.W.P.R.R.

1483 McGOWAN, WILLIAM F. 1954. Redwoods and the Railroad. Address before the Redwood Region Conserv. Council, Eureka, Calif. June 15, 1954. 8 p. Processed.

Describes the interdependence of the common carrier railroad and industry. Cites statistics on the operation of the Northwestern Pacific Railroad, for which lumber produces 70 per cent of the total traffic.

1484 McNAIRN, JACK, and JERRY MacMULLEN. 1945. Ships of the Redwood Coast. Stanford Univ. Press, Stanford Univ., Calif. 156 p. Illus., index.

Description and history of the wooden "steam schooners" that carried lumber down the coast from the redwood mills, including the old sailing vessels and the later steel ships. Appendices list the schooners, operators, and masters of the wooden steamers.

1485 MANSON, BYRNE C. 1951. The Machining of California Redwood. Calif. Redwood Assoc., Redwood Research Rpts. Research Project 3.63510-A. 6 p. Illus. Processed.

The data presented here represents the advice of the most experienced personnel in the field and can be used as a guide in machining operations.

1486 WAGNER, JACK R. 1948. California Western. *Amer. Forests.* 54: 408-409, 418. Sept. 1948. Illus.

History and description of the railroad between Willits and Fort Bragg, which began operation in 1911.

Lumber Grades and Grading

1487 ANON. 1952. New Redwood Grading Rules. *Redwood Region Logging Conf. Bul.,* Brizard-Matthews

Machinery Co., Eureka, Calif. p. 5.

Brief description of the grading rules issued by the Calif. Redwood Assoc. on Aug. 1, 1951.

1488 ANON. 1953. Redwood Grading Schools Train 1000. *Timberman.* 54:136-137. June 1953.

News article on the grading schools conducted by the Calif. Redwood Association.

1489 ANON. 1929. Redwood Structural; New Grades Promulgated. *Timberman.* 30:28-29. April 1929.

New schedule of grades developed by the Calif. Redwood Assoc. in cooperation with the Calif. Div. of Highways, primarily for bridge construction.

1490 BRUNDAGE, MARSDEN R. 1936. Comparative Lumber Selling Values of Different Grades and Sizes of Redwood Logs. U.S. Forest Serv. Calif. Forest and Range Expt. Sta. Research Note No. 8. March 10, 1936. 8 p. Tables. Processed.

Notes on a preliminary analysis of a mill-production study in Humboldt County conducted in 1935. Tentative specifications are given for 5 log grades. Tables give preliminary analysis of log realization values, and per cent of each lumber grade produced from logs of different diameters and log grades.

1491 BRUNDAGE, MARSDEN R., and T. J. ORR. 1936. Comparative Yield of Lumber Grades. U.S. Forest Serv. Calif. Forest and Range Expt. Sta. Research Note No. 12. Oct. 2, 1936. 5 p. Tables. Processed.

Subtitled: From three grades of redwood logs classified on the basis of their superficial appearance in the standing tree. Tables include average selling values of the lumber from logs of each 10-inch diameter class.

1492 CALIF. REDWOOD ASSOC. 1936. Standard Specifications for Grades of California Redwood Lumber. Calif. Redwood Assoc. San Francisco. 72 p. Index, tables. (Revised Dec. 1942; Dec. 1946; Aug. 1951; Nov. 1955.)

Including diagrams of the "most used stock patterns of worked California Redwood." The Nov. 1955 edition has a companion volume, "Grader's Manual; Rough, Green Grades of California Redwood," 16 p., tables.

1493 CALIF. REDWOOD ASSOC. 1936? Structural Redwood. Calif. Redwood Assoc., San Francisco. 24 p. Illus.

Full title on inside: Standard grading and dressing rules for structural redwood with structural design data and miscellaneous information. Trade literature.

1494 DAVIS, EDWARD M. 1931? Characteristic Defects of Softwood Yard Lumber. U.S. Forest Serv. Forest Prod. Lab., Madison, Wisc. Mimeo. R956. 36 p. Processed.

Brief description of the characteristics and defects of select and common grades of redwood, p. 25-26.

1495 NATIONAL LUMBER MANUFACTURERS ASSOC. 1934. Lumber Grade-Use: Guide for Softwood and Hardwood Lumber. Calif. Redwood Assoc., San Francisco. 12 p. Pamphlet 13.

Gives grade specifications, descriptions, designations, uses and sizes.

Left Overs and Salvage

1496 ANON. 1953. How Boards Are Made From Waste. *Lumberman.* 80:64-66. Nov. 1953. Illus.

Illustrated article on the use of short lengths and gluing for making wider and longer boards by the Hammond Lumber Co.

1497 ANON. (George Craig.) 1953. Quality Lumber from Salvage. *Timberman.* 55:90, 92. Nov. 1953. Illus.

Illustrated description of the Arcata Redwood Co. new sawmill at Orick, Calif., designed to break down woods leftovers.

1498 ANON. 1945. Salvaging Redwood with Portable Mills. *West Coast Lumberman* [*Lumberman*]. 72:83, 85. Aug. 1945. Illus.

Describes the operation of the Rockport Redwood Co., Rockport, Calif.

1499 ANON. (George Craig.) 1955. Special Salvage Equipment. *Timberman*. 56:54, 56, 58. Aug. 1955. Illus.

A well illustrated description of the new salvage logging and milling operation of the Hammond Lumber Co. at Big Lagoon near Trinidad: a 7-foot band mill, off-highway trucks to handle chunks; 10,000,000 ft. per year expected output.

1500 HILF, H. H. 1955. On the Utilization of Wood Leftovers. [Reprint from] *Holz-Zentralblatt* [Stuttgart, Germany]. 132-133:1-8. Nov. 5, 1955.

The author reports his observations on a trip through American forests. In the section entitled "The Redwoods as Volume Material and an Example of Wood Utilization" the redwood forest is described with reasons for the large volume of leftovers and the efforts toward utilization. Written in German.

1501 McCOOL, M. M. 1948. Studies on PH Values of Sawdusts and Soil-Sawdust Mixtures. Boyce Thompson Inst. for Plant Research, Yonkers, N.Y. *Contributions*. 15: 279-282. Tables.

Gives PH for redwood sawdust as 4.1-5.0.

1502 MAY, RICHARD H., and L. N. ERICKSEN. 1955. Wood Residue from Primary Wood-using Industries in California. U.S. Forest Serv. Calif. Forest and Range Expt. Sta., Berkeley. 15 p. Dec. 1955. Illus., tables, map. Processed. (Its Tech. Paper No. 13.)

Also in *Timberman*, 57:70, 72, 74, March 1956, with title "Wood Residue Concentrations in California."
This report gives the volume of waste wood originating at sawmills, veneer mills and other plants in California, and gives a breakdown by Humboldt and Mendocino areas. For the Redwood Region: 187,700,000 cubic feet of waste, of which 127,500,000 cubic feet is unused; used for fuel — 48,200,000 cubic feet, used for fiber — 6,200,000 cubic feet, other uses — 5,800,000 cubic feet.

1503 STEGEMAN, JOHN D. 1938. Waste Control in Redwood. *West Coast Lumberman* [*Lumberman*]. 65:16, 18. March 1938.

Control of waste due to processing, shrinkage, mechanical damage at the mill and degrade, with recommendations for waste reduction.

ECONOMICS: PRODUCTS AND INDUSTRIES

Production and Consumption

1504 ANON. 1890. [The Cut of Redwood Mills of Mendocino County for 1889.] *The Arcata Union*, Arcata, Calif. 4(27):2. Feb. 1, 1890.

1505 ANON. 1889. Humboldt Co. Lumber Business. *The Arcata Union*, Arcata, Calif. 3(24):3. March 12, 1889.

Amount of lumber shipped.

1506 ANON. 1929. Offshore Shipments are Heavy. *Amer. Lumberman*. 2835:44. Sept. 14, 1929.

Redwood lumber shipments from Humboldt Bay to offshore points totaled 881,000 lineal feet in August. 97,000 lineal feet of redwood molding were shipped to foreign ports. Richard F. Hammatt, Inspector, visited several redwood mills for purpose of inspecting structural grades of redwood. Many bridges are being built of redwood in California.

1507 ANON. 1889. Redwood Cut for 1888. *Humboldt Times Daily*, Eureka, Calif. 31(37):2? Feb. 13, 1889.

The cut of the redwood mills of Humboldt County for 1888, as compiled by *Pacific Coast Wood and Iron* [*Pioneer Western Lumberman*].

1508 ANON. 1942. Redwood Gains. *Business Week*. p. 52-54. Mar. 14, 1942.

1509 ANON. 1882. The Redwood Industry. *Pacific Rural Press* [*Calif. Farmer*]. 24:33. July 15, 1882.

Lumber cut of 1881 given as 130,465,714 feet worth $18 per M. Article also gives some examples of the durability of the wood. The cover of this issue is a line drawing of bull team skidding.

1510 ANON. 1932. The Redwood Industry. *Timberman*. 33:106. April 1932.

Statistics covering activities of preceding four years.

1511 ANON. 1955. Redwood Lumber. *Wells Fargo Business Rev.*, Wells Fargo Bank, San Francisco. p. 2-3. July 31, 1955.

Brief article on the increase in demand for redwood during 1954-1955.

1512 ANON. 1928. Redwood Production Active; Trade Prospects Good. *Amer. Lumberman*. 2761:37. April 14, 1928.

Production at redwood mills above normal; business in Northern California good, in Southern California improving, eastern trade and foreign trade are active.

1513 ANON. 1934. The Redwood Production Quota. *Timberman*. 35:71. Oct. 1934.

Quota for the redwood division of the lumber code authority for the fourth quarter.

1514 ANON. (Sam Hawkins.) 1936. Redwood Sawmills Are Busy. *West Coast Lumberman* [*Lumberman*]. 63:22-23. Nov. 1936. Illus.

News notes on production and new equipment.

1515 ANON. 1903. Redwood Shipments from the Mills. *Amer. Lumberman*. 1456:13. April 18, 1903. Tables.

Tables give domestic and foreign shipments of redwood lumber from Humboldt, Del Norte and Mendocino counties for March, and the first quarter, 1894-1903; by destination and amounts for 1902 and 1903.

1516 BETTS, HAROLD S. 1919. Timber: Its Strength, Seasoning, and Bending. McGraw-Hill Book Co., New York. 234 p. Tables, index.

Properties given in a table following p. 10; average annual production, 1899-1915, p. 204; synopsis of Calif. Redwood Assoc. grading rules, p. 186, 196; table of average annual consumption of wood by the various wood-working industries of the U.S., p. 212.

1517 BROWN, NELSON C. 1923. The American Lumber Industry. John Wiley & Sons, Inc., New York. 279 p. Tables, index.

Table on uses and production (1919) of redwood, p. 174.

1518 BROWNE, J. H. 1914. The Redwood of California. *Amer. Forestry* [*Amer. Forests*]. 20:795-802. Nov. 1914. Illus.

General information on redwood, with sketch of early logging. Article primarily concerned with markets and prices, and the effect on them of the opening of the Panama Canal for shipping, and a railroad into Humboldt County.

1519 BURKS, GEORGE F., and others. 1948. Commodity Production from Commercial Forest Land in California — 1946. U.S. Forest Serv. Calif. Forest and Range Expt. Sta., Berkeley. June 15, 1948. 38 p. Tables. Processed. (Its Forest Survey Release No. 6.)

Henry J. Vaux, Richard H. May, A. Simontacchi, joint authors.

Text and data on production of commodities by species.

1520 CALIF. REDWOOD ASSOC. 1933-1945. Four Year Comparison, Months Ending February 1933-January 1945; Redwood Only. Calif. Redwood Assoc., San Francisco. Tables. Processed.

Tables on orders received, shipments, orders on books for shipment to various territories, and production.

1521 CALIF. REDWOOD ASSOC. 1932. The Redwood Industry. *Timberman.* 33:106. April 1932. Table.

Figures giving the production, shipments, stocks of the redwood industry for 1928-1931, as compiled by the Calif. Redwood Assoc.

1522 CALIF. REDWOOD ASSOC. 1943. Redwood Stock Sheet, Jan. 1-July 1, 1943. Calif. Redwood Assoc., San Francisco. [62] p. Tables. Processed.

An analysis of major redwood stocks on hand at the various mills participating in this report.

1523 CALIF. REDWOOD ASSOC. 1931+. Report for Month of Feb. 1931 [to date]. Calif. Redwood Assoc., San Francisco. Tables. Processed.

Tables give orders received and on hand, shipments, plant use, production, stocks on hand. (Note: Supersedes "Report for Week Ending . . .")

1524 CALIF. REDWOOD ASSOC. 1921-1931. Report for Week Ending [March 26, 1921-Jan. 31, 1931]. Calif. Redwood Assoc., San Francisco. Tables. Processed.

Tables of shipments, orders, and production. Number of mills reporting is indicated. (Note: Superseded by "Report for Month of . . . ")

1525 CALIF. REDWOOD ASSOC. 1936-1946. Weekly Reports of Production, Shipments, Orders and Stocks [Oct. 15, 1936-Jan. 31, 1946]. Tables. Processed.

1526 CLARK, WILLIAM A. 1953. Forest Titan. *Wall Street J.* [Pac. Coast Ed.] 49:1. Dec. 31, 1953.

Article on the increased demand for redwood, for homes and industry.

1527 DEFEBAUGH, JAMES E. 1906. History of the Lumber Industry of America, vol. 1. The Amer. Lumberman, Chicago. 559 p.

Minor references to range of redwood on p. 15, 31, 336. Quantity and value of rough lumber products for 1900, p. 516.

1528 DIONNE, JACK. 1932. Redwood Production Lowest in Many Years. *Calif. Lumber Merchant.* 11:10. Dec. 1, 1932.

Includes figures showing drop in redwood production, with data on marketing.

1529 FERNOW, BERNHARD EDWARD. 1899. Report Upon the Forestry Investigations of the U.S. Dept. of Agr.; 1877-1898. House of Representatives, 55th Cong., 3d Sess., Doc. 181. Wash., D.C. 401 p.

Sets redwood cut at 500,000,000 ft. b.m. annually, p. 10. Redwood said to be "highly important for California forestry; perhaps also for that of Southern States," p. 57. General remarks on redwood, p. 88.

1530 FINLEY, F. F. 1901. Pacific Coast Redwood Shipments. *Amer. Lumberman.* 1339:29. Jan. 19, 1901.

Report on redwood shipments from the mills for 1900.

1531 GANNETT, HENRY. 1902. The Lumber Industry. U.S. [Census Office], 12th Census, 1900. Wash., D.C. Census Bul. 203. 97 p. Tables.

Bulletin on manufactures; many tables giving statistics for California lumber industry in general. Statistics for redwood in particular include: amount and value of shingles, rough lumber, stumpage, area "owned," average stand, cut (all figures are for 1900). Inserted at the end of the publication is a table of wholesale lumber prices for clear redwood for the years 1886-1908.

1532 HAMMATT, RICHARD F. 1921. Annual Report [of the] Secretary-Manager. Calif. Redwood Assoc., San Francisco. [15] p. Tables. Processed.

Includes names of officers, membership for the year, dues, financial statement. Brief resumés of activities and accomplishments of the Association are given. Two charts are appended to the report: production for 11 mills, 1921; domestic shipments, 1918-1921.

1533 HAMMATT, RICHARD F. 1926. Remedy Lies Within Industry Itself. *Calif. Lumber Merchant.* 5:46. July 1, 1926.

A brief outline of over-production and marketing problems by the Secretary of the Calif. Redwood Assoc.

1534 HANKS, HENRY G. 1882. Lumber and Fuel. In *Rpt. of the State Mineralogist, 1880-1882.* State Office, Sacramento. p. 202-216. Tables.

Reports the general trend of lumber production and consumption with specific reference to Coast redwood. Tables give "statement of receipts of lumber at San Francisco" for the years 1872-1881, for types of redwood lumber, stakes, poles, ties and siding, in feet.

1535 MARQUIS, RALPH W. 1939. Economics of Private Forestry. McGraw-Hill Book Co., New York. 213 p. Biblio., index.

Textbook on general economics, with brief references only to the Pacific Coast region.

1536 MAY, RICHARD H. 1953. A Century of Lumber Production in California and Nevada. U.S. Forest Serv. Calif. Forest and Range Expt. Sta., Berkeley. 33 p. June 1953. Illus., tables, maps, biblio. Processed. (Its Forest Survey Release No. 20.)

Includes a brief history of the region. Tables give lumber production by species and year (for redwood, from 1899 to 1951), by region and species from 1920-1951, lumber production and number of sawmills by county (for Calif. Redwood Region from 1940-1951). Bibliography of Lumber Production, arranged in chronological order, p. 27-33.

1537 MAY, RICHARD H. 1952. Lumber Production in California and Nevada, 1951. U.S. Forest Serv. Calif. Forest and Range Expt. Sta., Berkeley. 14 p. Dec. 1952. Tables, maps. Processed. (Its Forest Survey Release No. 17.)

Gives data for lumber production by species and region for 1949-1951; by mill-size class and species; by county and species.

1538 MAY, RICHARD H. 1954. Output of Forest Products in California, 1952. U.S. Forest Serv. Calif. Forest and Range Expt. Sta., Berkeley. 10 p. July 1954. Tables. Processed. (Its Forest Survey Release No. 23.)

Gives production data for redwood lumber, veneer logs, pulp logs and bolts, shingle bolts, poles and piling, fence posts, and grape stakes.

1539 MERRILL, H. G. 1907. A Redwood Market Study. U.S. Forest Serv. Calif. Forest Expt. Sta., Berkeley. 37 p. Processed.

A good description of logging in 1907, including wood and lumbering costs, prices, and markets.

1540 NATIONAL LUMBER MANUFACTURERS ASSOC. 1939+. Lumber Industry Facts, 1939+. Natl. Lumber Mfrs. Assoc., Wash., D.C. v.p. Tables.

Contains data on products, production, shipments, consumption. Produced irregularly: 1939, 1940, 1941, 1943, 1947, 1950, 1953.

1541 NATIONAL LUMBER MANUFACTURERS ASSOC. 1929+. Statistical Summary of Lumber Production, Shipments, Orders, Stocks. Wash., D.C. 1929-1951. Tables. Processed.

Issued irregularly, but all statistics for the years covered are included, since the reports are cumulative. Contains data on the Redwood Region, which includes all softwoods in the ten northwestern coastal counties of California except a few mills in the eastern section which have been included in "Western Pine."

1542 SMITH, FRANKLIN H., and ALBERT H. PIERSON. 1916. Reported Production of Redwood Lumber 1916. U.S. Dept. of Agr., Wash., D.C. Bul. No. 673, April 19, 1916.

Average value, Table 19, p. 24-25.

1542a STEER, H. B. 1948. Lumber Production in the United States, 1799-1946. U. S. Dept. of Agr., Wash., D.C. Misc. Pub. No. 669.

Redwood production on p. 208.

1543 U.S. DEPT. OF COMMERCE. 1936. California Redwood, 1932-1935. Survey of Current Business 1936 Supplement. p. 114. [Supplemented in monthly numbers.]

. . . 1938 Supplement, p. 129, Calif. redwood 1934-1937; . . . 1940 Supplement, p. 128, Calif. redwood 1936-1939; . . . 1942 Supplement, p. 135, Calif. redwood 1938-1941.

1544 U.S. FOREST SERVICE. 1927. American Forests and Forest Products. Govt. Printing Office, Wash., D.C. Statistical Bul. 21. Oct. 1927. 324 p. Tables, index.

Contains statistical tables including lumber production (1899-1925), log prices (1924), consumption (1916), mill prices (1899-1924), crossties, resource, export, mills.

1545 U.S. FOREST SERVICE. 1908. Forest Products of the United States: 1906. U.S. Forest Serv., Wash., D.C. Bul. 77. 99 p. Tables.

Statistical tables cover: redwood lumber production; stumpage values; shingle production; cross ties; poles. Some tables refer to 1899 and 1904 as well as 1906.

1546 U.S. FOREST SERVICE. 1928-1948. Lumber Used in Manufacture. U.S. Forest Serv., Wash., D.C. [v.p.] Tables. Processed.

Subtitled: Preliminary statistics, forest survey of the U.S. A complete series of tables, by states, showing the quantity of wood used in the form of lumber and otherwise by industries making products wholly or partly of wood, for the years 1928, 1933, 1940, 1948.

1547 U.S. FOREST SERVICE. CALIF. FOREST AND RANGE EXPERIMENT STATION. 1932+. Production of Lumber, Lath and Shingles in California 1932-1950. Berkeley, Calif., 1933+. v.p. (Its Research Notes No. 3, 6-7, 29, 40, 45, 50, 55, 65; its Technical Notes No. 3, 6, 10, 12-13, 15, 19.) Tables. Processed.

Primarily production figures, including the Redwood Region, by species. Title varies.

1548 U.S. TIMBER CONSERVATION BOARD. LUMBER SURVEY COMMITTEE. 1931+. Report from the Lumber Survey Committee. . . . Wash., D.C. v.p. Tables. Processed.

"Report on . . . lumber movement, consumption, stock and anticipated consumption" to the Dept. of Commerce. Contains redwood statistics, and comments on market conditions. Quarterly.

1549 —

1550 VAUX, HENRY J. 1955. Loggers Hold Key. *Redwood Region Log-*

ging Conf. Bul., Brizard-Matthews Machinery Co., Eureka, Calif. p. 6, 17.

Discusses the national role of lumbering in California, emphasizing the increased production and the price-cost outlook.

Prices

1551 ANON. 1951. First National Forest Redwood Sale. *Timberman*. 52:78. March 1951.

News item on the sale of 3,570,000 b.f. of redwood timber at $10 per M on the Six Rivers National Forest; from a sale area of 310 acres; other species will also be taken. The article also gives the redwood log grades used to estimate the quality of timber.

1552 ANON. 1924. Northern California Market. *West Coast Lumberman* [*Lumberman*]. 46:21. Apr. 1, 1924.

Rain, frost and redwood prices.

1553 ANON. 1899-1915. Wholesale and Cargo Price Lists: Redwood Lumber. Incomplete series in Univ. of Calif., Bancroft Library, Berkeley.

1553a CALIFORNIA DIVISION OF FORESTRY. 1947+ Forest Management Memos. Publication irregular. State Division of Forestry, Sacramento. Processed.

Beginning in May 1949, redwood stumpage prices realized on public lands are reported. Memos up to May 1949 include items other than price notes, for example, use of sodium arsenite for killing and loosening bark on standing redwood.

1554 PINCHOT, GIFFORD. 1908. Redwood. U.S. Forest Serv., Wash., D.C. Bul. 77, p. 47. Mar. 2, 1908.

Average value of redwood stumpage.

1555 REDWOOD LUMBER MANUFACTURERS ASSOC. 1893? Redwood Lumber: Statistics of the Port of San Francisco, from 1862. Compiled by Redwood Mfrs. Assoc. [San Francisco.] Tables.

Tables, giving prices for rough and "surfaced" lumber, by month, for the years 1863-1882, and consumption figures for the same period.

1556 REVEAL, JACK L. 1944. Markets for Farm Forest Products, Sonoma County, Calif. Soil Conservation Service in cooperation with Calif. State Div. of Forestry, Sebastopol, Calif. 11 p. Processed.

Handbook of prices paid for various products from redwood and other forests in Sonoma County.

1557 SMITH, KENNETH. 1946. Statement of Kenneth Smith, President, California Redwood Assoc. In *Investigation of Lumber and Wood Products Being Exported from the United States*. U.S. Congress. Senate. Committee on Agr. and Forestry. March 11, 12, and 15, 1946. p. 94-97. (U.S. 79th Cong., 2d sess. Senate. Senate Resolution 230.)

Testimony of Mr. Smith on export and prices. Statement that the Calif. Redwood Assoc. produced 83 per cent of the regional total of 450 million b.f.; exports could have been 40 million, but were cut to 10 million voluntarily as allocated by O.P.A. Primarily the testimony concerns O.P.A. regulations and rulings as to price and production, which Mr. Smith opposes as not necessary, and hampering to production.

1557a STEER, H. B. 1928+. Stumpage and Log Prices. U. S. Dept. of Agr., Wash., D.C. Statistical Bulletins Nos. 32, 36, 37, 44, 48, 51, 57, 62, 66, 71, 75, 76, 78-80, 82.

See also Steer, H. B., Stumpage and Log Prices for the Calendar Years 1923-1927. U. S. Forest Service, 1928. 54 p. Illus., tables.

1557b STEER, H. B. 1938. Stumpage Prices of Privately Owned Timber in the United States. U. S. Dept. of Agr., Wash., D.C. Tech. Bul. No. 626. July 1938. 136 p. 40 tables, biblio.

1558 U.S. FOREST SERVICE. 1908. Forest Service Atlas, Statistics, 1907. U.S. Forest Serv., Wash., D.C. 30 p. Maps, tables.

Redwood cut for 1906, 659,678 M. Table of comparative stumpage values for 20 species for 1899, 1904, 1907 gives average value per M for redwood as $1.06, $1.55, $2.35.

1559 U.S. FOREST SERVICE. CALIF. FOREST AND RANGE EXPERIMENT STATION. 1941-1943. Stumpage and Log Prices in California. Berkeley, Calif. v.p. Tables. Processed. (Its Technical Note No. 20; Research Notes No. 30, 38.)

Includes prices for redwood.

1560 U.S. OFFICE OF PRICE ADMINISTRATION. 1942. Ceiling Prices on Redwood. Wash., D.C. 16 p. Tables.

Similar material in *West Coast Lumberman [Lumberman]*, 69:38, Dec. 1942; *Timberman*, 44:76-77, Dec. 1942. These articles do not contain tables, but give price and production information regarding O.P.A. Regulation 253.

1561 U.S. OFFICE OF PRICE STABILIZATION. 1952. Ceiling Price Regulation 158. Wash., D.C. July 18, 1952, 6 p.; Amendment 1, Dec. 16, 1952, 1 p. Tables.

Ceiling prices for f.o.b. sales of redwood lumber.

Markets and Marketing

1562 ANON. 1888. California As It Is. 5th ed. Daily and Weekly Call, San Francisco.

One section (p. 239-240) tells of efforts being made to introduce redwood into the east.

1563 ANON. 1901. An Explanation About Redwood. *Amer. Lumberman.* 1386:12. Dec. 14, 1901.

Brief article giving inaccessibility and lack of proper grading and seasoning as the reasons why redwood was not yet of great importance on the market.

1564 ANON. 1888. [Freight on Redwood Lumber.] *Humboldt Times Daily,* Eureka, Calif. 29 (60) : 3. March 14, 1888.

The net freight on redwood lumber to San Francisco is the same as thirty-four years ago. Tonnage is $2.50 per M less.

1565 ANON. 1881. Our Lumber Interests. *Humboldt Times Weekly,* Eureka, Calif. 28 (11) : 2. Nov. 12, 1881.

Redwood lumber association formed with the object in view of protecting the market when prices are low and the demand falling off.

1566 ANON. 1901. The Recognition of Redwood. *Amer. Lumberman.* 1375: 17. Sept. 28, 1901.

Demand for products, particularly in markets east of the Rockies.

1567 ANON. 1901. Redwood: Its Superior Qualities and Possibilities. *Pac. Coast Wood and Iron [Pioneer Western Lumberman].* 36: 216-217. Dec. 1901. Illus.

This is the first of a long series of articles dealing with the general subject of commercial redwood lumber operations, designed to aid the manufacturers by developing an "appreciation of this wonderful lumber in the minds of eastern and foreign lumbermen, contractors, architects and builders." The series continues through 1904; title varies.

1568 ANON. 1937. Redwood Tells Its Story to Southern California. *Amer. Lumberman.* 3098: 34. April 24, 1937. Illus.

News note on exhibit of redwood by

the Calif. Redwood Assoc. in the Architects' Building, Los Angeles.

1569 ANON. 1949. Sempervirens Goes to Market. *Western Advertising.* 53:40-41. April 1949. Illus.

Article describing the film "Sempervirens" produced by Gene K. Walker, which advertises the finished products of redwood, primarily.

1570 ANON. 1937. Sequoia Sempervirens. *Sales Management.* 40: 1191. June 15, 1937.

1571 ANON. 1900. Superior Qualities of Redwood. *Pac. Coast Wood and Iron [Pioneer Western Lumberman].* 34:209. Dec. 1900.

Written to inform eastern dealers in lumber of the qualities of redwood.

1572 ANON. 1931. Union Lumber Company's Big "Prosperity Special." *Calif. Lumber Merchant.* 9:18-19. May 1, 1931. Illus.

Brief article about a 50-car train, "herald of good times in industry," carrying shipments to Mendocino, Sonoma, Napa and Marin communities for buildings.

1573 ANON. 1926. [Various articles.] *Timberman.* 28:23, 24, 48, 90, 132, 154, 156, 191. Nov. 1926.

Redwood found under Canada Lake, p. 23; Redwood salesmen meet, p. 24; Costs in the inland empire, p. 48; California redwood, p. 90; Redwood frames (Pac. Lumber Co. increasing production), p. 132; Redwood grading rules, p. 154; Sand blast redwood (Holmes-Eureka Lumber Co. experiment), p. 156; Redwood Annual (Calif. Redwood Assoc. meeting), p. 191.

1574 ANON. 1926. [Various articles.] *Timberman.* 28:48, 114, 122, 134, 137, 152, 234. Dec. 1926.

Tannic acid from redwood, p. 48; Sonoma redwood, p. 114; Redwood seed order (Australia and New Zealand order seeds), p. 122; Redwood plywood (Plywood Products Co. receiving many requests for samples), p. 134; Introducing Pacific Coast woods to Buffalo (a dealer's experience with selling), p. 137; Redwood squares to Japan, p. 152; California tie camp (Calif. Tie & Timber Co. purchased 40,000,000 feet of San Mateo redwood to make into ties), p. 234.

1575 CALIF. REDWOOD ASSOC. 1921. California Redwood: Trade Extension Manual for 1921, and for 1922. [Calif. Redwood Assoc., San Francisco.] 19 p.; 35 p. Illus.

"Containing a statement of the policies and objectives of the Calif. Redwood Assoc. together with proofs and charts presenting the 1921 advertising campaign." And for 1922: "Illustrating the dealer help and the newspaper advertising service prepared by the Calif. Redwood Assoc. for the use of and distribution by the sales forces of its member companies and their trade connections."

1576 CALIF. REDWOOD ASSOC. 1944+. Distribution of Redwood Shipments, 1944+. Calif. Redwood Assoc., San Francisco. v.p. Tables. Processed.

Also titled "Distribution of Eastern Shipments." Gives data on shipments, and compares figures with previous years. Monthly.

1577 FARNSWORTH, P. T. 1949. Selective Selling is Key to Better Markets for Redwood. *Sales Management.* 62:106+. April 15, 1949.

1578 HOYLE, RAYMOND J. 1928. Wood-using Industries of New York. Syracuse Univ. New York State College of Forestry. Tech. Pub. 27. 160 p. Tables.

Information assembled so that it "can be put to practical use by those who have forest products for sale, and desire to find a . . . market." List of 13 uses of redwood; tables give amounts used in New York industries, with dimensions and grades. Figures for 1912, 1919, 1926.

1579 JOHNS, MILTON V. 1925. California Redwood and Its Distribution. The Redwood Sales Co., San Francisco, Calif., 1925? 47 p. Illus.

Trade brochure describing redwood trees, lumber, and production. Member mills of the Sales Co. are pictured and described.

1580 KELLY, THOMAS SMITH. 1939. The Marketing of Redwood Lumber Through Wholesale Middlemen. . . . 1939. 140 p. Processed.

Thesis (M.A.) — Univ. of California, May 1939.

1581 KLINE, MASON E. 1932. California Redwood. *Calif. Lumber Merchant.* 10:28, 31, 33. Jan. 1, 1932.

An address before the Purchasing Agents Assoc. of Northern California. Contains some history of early sawmills, and general information on uses and durability.

1582 LEIDESDORFF, WILLIAM ALEXANDER. Correspondence, 1810-1848. 3 items. MS. in California Historical Society, San Francisco.

The correspondence (1847-1848) between Leidesdorff and Stephen Smith is concerned with shipments of lumber and wheat from Bodega, Sonoma County, California, to San Francisco.

.1583 SELFRIDGE, E. A. 1915. Problems of Redwood. *Lumber World Review* [*Chicago Lumberman*]. 28(10):40. May 25, 1915.

Problems of merchandising redwood.

1584 SMITH, O. H. 1901. Redwood and Its Status in the East. *Amer. Lumberman.* 1353:29. April 27, 1901.

Letter from the manager of the Bartlett Lumber Co., Boston, Mass., on redwood in eastern markets.

1585 WHIPPLE, S. G. 1888. The Lumber Business. *Humboldt Times Daily,* Eureka, Calif. 29(53):2. March 6, 1888.

Prospect of a drop in prices during the coming summer and fall, boom in Southern California has caused increase in freight rates. Lumbermen have begun building vessels for their own use and shipyards are rushed with work.

Export

1586 ANON. 1888. The British Brigantine "Donalena." *Humboldt Times Daily.* 29(26):3. Jan. 26, 1888.

Cleared at the custom house for Guaymas, Mexico, with cargo of pine, redwood and shingles.

1587 ANON. 1928. California Redwoods. *Timberman.* 29:4. Aug. 1928.

Information on redwood export market and prices of split products.

1588 ANON. 1905. Domestic and Foreign Redwood Shipments. *Pac. Coast Wood and Iron* [*Pioneer Western Lumberman*]. 43:13. Feb. 1905. Table.

Comparative figures on export from 1899-1904, by regional destination, with totals for each year.

1589 ANON. 1935. Duty Imposed on Redwood. *Timberman.* 37:49. Nov. 1935.

Brief news note on the assessment of a tariff on redwood shipped into Cuba, which was being protested.

1590 ANON. 1904. The Exporting of Redwood Lumber. *Pac. Coast Wood and Iron* [*Pioneer Western Lumberman*]. 42:19. Nov. 1904. Illus.

Article on the interest in the development of markets, with particular reference to the Hobbs, Wall & Co. mill at Crescent City, Del Norte County.

1591 ANON. 1868. Exports and Importations. *Alta California,* San Francisco. 20(6712):4. Aug. 1, 1868.

Exports: 20,728 feet of lumber to Mexican ports . . . from west coast ports; vessels with lumber; ports of departure, consignees. Importations: ports of departure, vessels and amount of lumber.

1592 ANON. 1868. Exports and Importations. *Alta California*, San Francisco. 20(6714):4. Aug. 3, 1868.

Exports: amounts of lumber and shingles shipped to Burrards Inlet and Honolulu. Importations: sources and amounts of lumber; vessels, ports of departure and cargoes.

1593 ANON. 1868. Exports and Importations. *Alta California*, San Francisco. 20(6715):4. Aug. 4, 1868.

Exports: lumber shipments to Japan and Mazatlan. Importations: sources, carriers and respective cargoes; list of vessels, their ports of departure and cargoes.

1594 ANON. 1868. Importations. *Alta California*, San Francisco. 20 (6716):4. Aug. 5, 1868.

Lumber carriers, list of vessels, ports of departure, consignees, and lumber in feet.

1595 ANON. 1935. Increasing World Market for Redwood. *Timberman*. 36:25-26. Jan. 1935. Illus.

News note on a study of export possibilities made by A. W. Stricker of the Redwood Export Co.

1596 ANON. 1929. Large Redwood Cargo. *Timberman*. 30:140. Jan. 1929.

3,320,000 feet of sawed ties and redwood lumber shipped to Central American ports from Humboldt Bay.

1597 ANON. 1932. Lumber Business of Panama. *Timberman*. 33:63. June 1932.

Redwood highly prized in Panama on account of its resistance to attacks of white ants (termites).

1598 ANON. 1928. Porto Rico Redwood Active. *Timberman*. 29:25. Aug. 1928.

Market for redwood being promoted in Porto Rico.

1599 ANON. 1914. Redwood Coming Into Its Own. *Pioneer Western Lumberman*. 62:3-13. Oct. 15, 1914.

Completion of Northwestern Pacific R. R. paves way for increase of manufacture of redwood products in area. Possibilities of pulp production from redwood and results of pulp-making tests.

1600 ANON. 1928. Redwood Enters Argentina. *Timberman*. 29:118. Feb. 1928.

1601 ANON. 1932. Redwood Export. *Timberman*. 33:100. June 1932.

Inquiries in various world markets continue fairly active; distribution of June shipments.

1602 ANON. 1932. Redwood Export Trade. *Timberman*. 33:96. Jan. 1932.

Brief resumé of the outlook for export markets.

1603 ANON. 1934. Redwood Export Trade. *Timberman*. 35:60. Oct. 1934.

Some important foreign markets.

1604 ANON. (George M. Cornwall.) 1939. Redwood Export Trade. *Timberman*. 40:60. May 1939.

Address by R. J. Gutierrez of the Redwood Export Co. before the Oakland Foreign Trade and Harbor Club.

1605 ANON. 1928. Redwood Exports Register Gain Over Last Year. *Timberman*. 29:102. Aug. 1928.

Shipments from Humboldt Bay, export destination.

1606 ANON. 1929. Redwood in Japan. *Timberman*. 30:118-119. June 1929.

Primary uses in Japan.

1607 ANON. 1936. Redwood Shipped to South Africa. *Timberman*. 37:42. Jan. 1936. Illus.

News note on shipments of cooling tower stock.

1608 BOADLE, A. E. 1928. The British Lumber Market. U.S. Dept. Commerce, Bur. Foreign and Dom. Commerce, Trade Promotion Series No. 64, Wash., D.C. 351 p. Index.

Brief resumé of imports into the United Kingdom; lumber trade there associates it with large stock, requiring seasoning. Amount exported in 1927 was 357 M.

1609 PIERSON, ALBERT H. 1908. Exports and Imports of Forest Products. U.S. Forest Serv., Wash., D.C. Circ. 153, p. 13-14. Aug. 1908.

Table 16: Foreign shipments of redwood from Humboldt, Mendocino, and Del Norte counties, Calif., in 1907.

1610 PIERSON, ALBERT H. 1909. Redwood — Exports and Imports of Forest Products. U.S. Forest Serv., Wash., D.C. Circ. 162, p. 16-17. May 1909.

Table 19: Foreign shipments of redwood from Humboldt, Del Norte, and Mendocino counties, Calif., in 1907 and 1908.

LUMBER AND OTHER PRODUCTS

Lumber

1611 ANON. 1884. Illustration of Industrial Art. *Evening Bulletin,* San Francisco. Sept. 8, 1884. p. 2.

Tells of the use of redwood in its native color for finishing house interiors. States that the best material for this purpose comes from the butt log and stump, including the roots.

1612 ANON. 1916. Redwood Lumber and Its Uses. *Amer. Forestry* [*Amer. Forests*]. 22:329-332. June 1916. Illus.

1613 ARMSTRONG, ANDREW K. 1912. Wood-using Industries of California. Calif. State Board of Forestry, State Printing Office, Sacramento. Bul. 3. 114 p. Illus., tables.

Statistics were compiled from data collected during 1910; tables include production and consumption figures by species and industry. The publication "covers only the woods worked up into finished products within the borders of California, disregarding cross ties, lath, mining timbers, shingles, telegraph and telephone poles, rough lumber." Twenty-five industries using redwood are outlined generally as follows: the per cent of redwood used by the industry; the specific articles manufactured; why the wood is used for the purpose; the dimensions and grade of stock used; the quantity and f.o.b. factory average cost per M and total cost.

1614 CALIF. REDWOOD ASSOC. 1933? California Redwood. Calif. Redwood Assoc., San Francisco. 23 p. Illus.

Trade literature showing many of the uses of redwood, primarily homes and other construction. Similar publications issued on subsequent dates. Complete files in library of Calif. Redwood Assoc., San Francisco.

1615 CALIF. REDWOOD ASSOC. 1917. California Redwood for the Engineer. Calif. Redwood Assoc., San Francisco. 19 p. Illus.

Trade literature on the wood, emphasizing its durability, resistance, and uses for railroads, construction, and interiors, and its superior qualities for tanks and vats, pipes and flumes, concrete forms, with illustrations of each.

1616 CALIF. REDWOOD ASSOC. 1916? California Redwood: Nature's Lumber Masterpiece. Calif. Redwood Assoc., San Francisco. 70 p. Illus.

Trade literature, primarily on interior trim in homes and public buildings. Many illustrations, plus 10 plates showing various finishes.

1617 CALIF. REDWOOD ASSOC. 1940. General Characteristics of Redwood. Calif. Redwood Assoc., San Francisco. 8 p. Illus., table. [Reprinted from] Sweet's Catalog File, 1940.

Including patterns, strength properties, description of grades, suggestions to specification writers.

1618 CALIF. REDWOOD ASSOC. 1939? Lumber Letters No. 1-11. Calif. Redwood Assoc., San Francisco. 11 vols. Processed.

Information on characteristics of redwood lumber and its utilization. Letter 1. Physiology of trees, 2. Durability, 3. Strength, 4. Shrinkage, 5. Density . . ., 6. Stiffness . . ., 7. Nailing, 8. Mill roofs, 9. Sash and frames, 10. Redwood siding, 11. Causes and prevention of paint difficulties occasioned by moisture.

1619 CALIF. REDWOOD ASSOC. 1939+. Redwood Data Book. Calif. Redwood Assoc., San Francisco.

A looseleaf book, consisting of leaflets and bulletins on redwood properties and uses. Organized into seven sections and an index, covering redwood in general, marketing, lumber, siding, cabins, tanks, pipes, heavy structures, homes, etc. Very useful trade literature. (Note: also issued in a pocket size, giving the basic information, and with brief reference to the sections of the looseleaf issue; dated 1949.)

1620 CALIF. REDWOOD ASSOC. 1917. Specialty Uses of California Redwood. Calif. Redwood Assoc., San Francisco. 24 p. Illus.

Trade literature, emphasizing insulation uses for roofs, ice houses, lath construction, caskets, and greenhouses, and miscellaneous uses as organs, boxes, interiors.

1621 CALIF. REDWOOD ASSOC. 1931+. Technical Bulletins. Calif. Redwood Assoc., San Francisco, 1931-1936? v.p. Illus., tables.

Includes the *Redwood Information Series*. A technical series of trade publications treating various aspects of redwood, including characteristics and properties of the wood, finishing, and uses in construction, interiors and exteriors, and various tanks and vats.

1622 CALIF. REDWOOD ASSOC. 1940. This Is Redwood. Calif. Redwood Assoc., [San Francisco]. 27 p. Illus. [Reprinted from] The Redwood Issue, *Architect and Engineer*, March 1940.

A well-illustrated series of brief articles, mostly on uses of redwood. On p. 25-26, an article on the chapel at Fort Ross, built in 1811.

1623 CARR, A. 1870. Illustrated Handbook of California; Her Climate, Trade, Exports and Agricultural and Mineral Wealth, etc. Sampson Low, Son, & Marston, London.

Timber trees and their products, p. 59-60.

1624 DAHL, ARTHUR L. 1921. Some Special Uses of Redwood. *Sci. Amer.* 124:286, 297. April 9, 1921. Illus.

Author cites the value of redwood for tanks, pipes, staves and containers because of its durability, insulating qualities, resistance to rot and decay, and ability to keep its shape.

1625 DAVIS, E. M. 1950. Shaping End Grain of Redwood. *Wood.* 5:20-21, 44-45. April 1950. Illus., table. (U.S. Forest Serv. Forest Prod. Lab. Mimeo. 1755.)

Redwood for core material in hardwood plywood. Gives data on cutter heads. (Note: This article based on Report R1755, Forest Products Laboratory, Madison, Wisc. Processed.)

1626 HALL, WILLIAM L., and HU MAXWELL. 1911. Uses of Commercial Woods of the United States: 1. Cedars, Cypresses, and Sequoias. U.S. Forest Serv., Wash., D.C. Bul. 95. 62 p.

Redwood, p. 47-56. Physical properties are given. Briefly covers: the supply, early uses, cross ties and railroad construction, tanks and flumes, house construction, interior finish, furniture, miscellaneous uses, by-products, waste.

1627 HAMMOND LUMBER CO. 1951. California Redwood and its Uses. San Francisco. 4 p. Illus.

1628 HAYWARD, PHILLIPS A. 1930. Wood: Lumber and Timbers. Chandler Cyclopedia, vol. 1, New York. 521 p. Illus., index.

Gives general brief information on the tree and the wood; tables give the types and sizes of wood available, and the shipping weights. The emphasis of the material is for the "scientific selection, purchase, and use of commodities." Redwood is discussed on p. 425-432.

1629 HOLTMAN, DUDLEY F. 1929. Wood Construction: Principles — Practice — Details. McGraw-Hill Book Co., Inc., New York. 712 p. Tables, index.

Brief section on the characteristics of the wood and common uses, p. 125-126; resistance to termites, p. 229; tables of uses for redwood and the grade recommended for each purpose by the Calif. Redwood Assoc., p. 606-614.

1630 KELLOGG, ROYAL S. 1931. Lumber and Its Uses, 4th ed., rev. Scientific Book Corp., New York. 378 p. Illus., index.

Statement of durability and general uses, p. 313. On p. 314 a picture of a redwood tree stump 11 ft. in diameter and 2500 years old growing over a fallen redwood which is in a good state of preservation. (Age incorrectly reported; the erect stump is a union of about five trees, about 600 years old. The horizontal tree was cut into shingle bolts. E.F.)

1631 NEUBRECH, W. LEROY. 1937. California Redwood and Its Uses. U.S. Dept. of Commerce. Bur. of Foreign and Dom. Commerce, Wash., D.C. Trade Promotion Series No. 171. 31 p. Illus., tables.

Bulletin prepared by the Forest Products Division "for the purpose of supplying basic authentic information" on properties and uses. Contains tables on properties, export (1929 and 1935), and grading specifications.

1632 PANSHIN, A. J., and others. 1950. Forest Products: Their Sources, Production, and Utilization. McGraw-Hill Book Co., New York. 1950. 549 p. Illus. Refs.

Includes products made from redwood.

1633 REDWOOD NEWS. 1950+. [A publication of . . .] Calif. Redwood Assoc., San Francisco. v.p. Fall 1950+. Illus.

Trade association publication, issued irregularly. Contains well-illustrated, brief articles on redwood uses, primarily homes and interiors.

1634 RENO, JOHN. 1951. Redwood Core Stock. *Wood and Wood Products*. 56:34, 38, 58. Aug. 1951. Illus.

Redwood described for use as furniture cores.

1635 SHERWOOD, MALCOLM H. 1936. From Forest to Furniture: The Romance of Wood. W. W. Norton & Co., Inc., New York. 284 p. Illus., index.

Popular. Chapter 60, "Monuments of Time," p. 216-221, tells of the beauty of Coast redwood, emphasizing burls.

1636 TAYLOR, FRANK J. 1929. Land of Homes. Powell Pub. Co., Los Angeles.

Redwood lumbering, p. 2, 163, 208, 283-286, 293-297, 304.

1637 TURRILL, CHAS. B. 1886. Catalogue of the Products of California. W. B. Stansbury & Co. Press, New Orleans.

Exhibited by the Southern Pacific Co. at the North Central and South American Exposition, New Orleans, Nov. 16, 1885, to Apr. 1, 1886. Lumber, p. 82, 145.

1638 U.S. BUR. FOREIGN & DOMESTIC COMMERCE. 1937. California Redwood (Sequoia Sempervirens) and Its Uses. U.S. Bur. Foreign & Domestic Commerce. Trade Promotion Series. 171:1-30.

Supplies information on California redwood, properties of the wood, the redwood industry, and the uses of redwood.

1639 WINN, WREN. 1919. Timbers and Their Uses. George Routledge & Sons, Ltd., London. 333 p. Index.

Redwood as used in cabinet making. Estimates stand at 25 billion feet.

Shingles

1640 ANON. 1888. An Improvement in Shingles. *Humboldt Times Daily,* Eureka, Calif. 29(46):3. Feb. 26, 1888.

A machine has been perfected that will plane, bead and snipe a shingle, making shingles that will last longer. Outgoing cargo of shingles, shakes, and lumber.

1641 ANON. 1875. Local Matters. *Humboldt Times Daily,* Eureka, Calif. 3(18):3. Jan. 21, 1875.

Quantity of shingles manufactured at mill of Fay & Bros. on the Peninsula for the year 1874; improvements at the mill, etc.

1642 ANON. 1889. Lumber News. *Humboldt Times Daily,* Eureka, Calif. 32(6):2. July 9, 1889.

"The Philadelphia market report of the Lumberman says: Redwood shingles sell quite well, and, sellers claim, do not shrink as badly as other shingles. For other purposes there is very little called for."

1643 ANON. 1888. Lumbering. *The Arcata Union,* Arcata, Calif. 2(41):2. May 5, 1888.

Over a million shingles are waiting shipment from Blue Lake, the transportation facilities from this point by railroad being taxed to their utmost capacity in the transportation of freight and passengers daily. Captain Geer has been engaged for the past few days shipping pepperwood logs by rail from Blue Lake.

1644 ANON. (Sam Hawkins.) 1938. Making Redwood Shingles. *West Coast Lumberman* [*Lumberman*]. 65:69. April 1938.

Brief item on the manufacture of redwood shingles at Fort Bragg.

1645 ANON. 1875. In Operation. *Humboldt Times Daily,* Eureka, Calif. 4(64):3. Sept. 14, 1875.

The Salmon Creek shingle mill was started up and is doing excellent work; the Fay Brothers' shingle mill on the Peninsula was given a successful trial run.

1646 ANON. 1902. Pacific Coast Shingles. *Pac. Coast Wood and Iron* [*Pioneer Western Lumberman*]. 37:14. May 1902.

Shingle mills of Humboldt Co. are booming, prices advancing, and every mill is busy.

1647 ANON. 1900. The Redwood Shingle. *Amer. Lumberman.* 1323: 32. Sept. 29, 1900.

Redwood shingle industry and transportation problems.

1648 ANON. 1932. Redwood Shingle Mill Quits. *Timberman.* 33:100. March 1932.

M. A. Burns Manufacturing Co., Eureka, discontinues after 30 years in business.

1649 ANON. (Sam Hawkins.) 1937. Redwood Shingles. *West Coast Lumberman* [*Lumberman*]. 64:16-17, 66. June 1937. Illus.

A reporter's write-up of a visit to the shingle mills in Humboldt County.

1650 CALIF. REDWOOD ASSOC. n.d. Redwood Roofing. Calif. Redwood Assoc., San Francisco. 4 p. Illus.

Trade literature.

1651 INNIS, W. E. 1915. Redwood Shingles and Shakes. *Lumber World Review* [*Chicago Lumberman*]. 28(3):61. Feb. 1915.

Report of Secretary. Redwoods Assoc., Eureka, Calif.

1652 NELSON, GEORGE W. 1955. Plain and Fancy. *San Diego Hist. Soc. Q.* vol. 1, No. 3. July 1955. (Copy located in the Calif. State Library, Sacramento.)

A short description of by-gone styles of redwood shingles. The author is chief inspector of lumber grades of the Calif. Redwood Association.

Split Products

1653 ANON. 1888. Humboldt Ties Preferred. *Humboldt Times Daily*, Eureka, Calif. 29(38):3. Feb. 16, 1888.

General discussion of ties. Redwood the best material, will last 12 or 13 years.

1654 ANON. 1932. Redwood. *Timberman.* 33:92. March 1932.

Southern Pacific and Northwestern Pacific placed orders for redwood trees for ties. 5,000 pieces of redwood ties and 17,000 pieces of split redwood posts shipped to Hawaii.

1655 KUPFER, C. A. 1915. Redwood Ties. Unpublished MS. in U.S. Forest Service Files. San Francisco.

Gives amounts of redwood ties used 1910-1914, list of operators, tie timber standing, market, prices, and durability.

1656 MYERS, EDWIN E. 1917. Use of Redwood by Railroads. *Railway Review.* 61:77-78.

Many uses of redwood for railway purposes listed, and the durability for ties.

Manufactured Products

1657 ANON. 1903. Californian Redwood as a Substitute for Steel. *Amer. Architect & Building News.* 82:5. Oct. 3, 1903.

News item. The chief engineer of the Niagara Falls Power Co. stated that redwood pipes resist corrosion and wear better than steel. "When water passes over (redwood) continuously there formed a surface of soapy and pasty nature which was proof against corrosion." Steel was destroyed by the velocity of the water carrying sand particles from the river. Three million feet of redwood were used in the project.

1658 ANON. 1955. Casket Shells Large Redwood Users. *Timberman.* 57: 86-87. Nov. 1955. Illus.

1659 ANON. 1944. Forestry and Wood Tanks. *Tank Talk* (Acme Tank Mfg. Co., Los Angeles). Nov. 1944. p. 3-4. Illus.

States that redwood and Douglas fir are the two woods most commonly used for tank manufacture; during 1940, 40.7 per cent of the total used was redwood.

1660 ANON. 1929. Redwood Casket Parts. *Western Wood Worker and Furniture Mfr.* 3:19, 22. July 1929. Illus.

Description of the Pacific Lumber Company's casket plant in Oakland, Calif.

1661 ANON. 1950. Redwood Logs Shipped to Nebraska. *Timberman.* 51:74. Aug. 1950. Illus.

Logs shipped to Seward, Nebraska, for manufacture into special cross arms.

1662 ANON. 1935. Redwood Tanks and Vats; Their Extensive Use in the Chemical Industry. *Chemical Age* (London). 32:291-292. Mar. 30, 1935. Excerpts: *Chemical Industries.* 36:443. May 1935.

1663 ANON. 1936. Wood Vats and Tanks for Chemical Works; California Redwood as a Vat-making Timber. *Chemistry Age* (London). 35:162. Aug. 22, 1936. Illus.

1664 ANON. 1930. World's Largest Redwood Tank. *Timberman.* 31:104. Feb. 1930. Illus.

Account of a tank 130 ft. in diameter and 17 ft. in height with a capacity of

1,700,000 gallons, built for use in the sewage disposal of Pasadena, Calif. Emphasis is placed on the resistance of redwood to chemicals.

1665 BROWN, EDGAR A. 1937. Redwood in Water Works Practice. Calif. Redwood Assoc., San Francisco. 8 p.

Paper presented by the Chief Engineer, Calif. Redwood Assoc., at the 18th annual Convention of American Water Works Assoc., Calif. Section, Oct. 1937. Discusses the use of redwood for waterworks structures because of its durability and other characteristics, and including grades for various uses.

1666 CALIF. REDWOOD ASSOC. 1949. Industry Chooses Redwood for the Tough Jobs. Calif. Redwood Assoc., San Francisco. [97] p. Illus., tables.

Trade literature of a technical nature on the uses of redwood in the chemical industries, for tanks, pipes, cooling towers and machinery parts which come in contact with moisture and chemical conditions. Includes the Technical Bulletins on these uses. (See also Calif. Redwood Assoc. Data Book and Research Reports.)

1667 CRAFTS, H. A. 1904. The California Redwood in Modern Engineering. *Sci. Amer.* 91 (ser. 2):396, 398. Dec. 3, 1904. Illus.

Popular. General information on cut and stand, with reference to depletion. Uses for pipes and tanks, with illustrations of pipes.

1668 FRITZ, EMANUEL. 1935. The Woods Used for Wine Tanks. *Wines and Vines*. 16:23. July 1935.

Brief article on the use and characteristics of oak and redwood for wine tanks in California; in the house organ of the Calif. Grape Protective Assoc.

1669 GOSNE, ZELLE. 1942. Salvaging Wood Stave Pipe. [Reprinted from] *Western Construction News*. Oct. 1942. 2 p. Illus.

Describes the removal of 12 miles of redwood and cedar stave pipe from central Wyoming oil fields for use in Vancouver, B.C. The pipe was laid about 20 years before to carry water but was not in use for the past 10 years; the water was mineral and hot. Redwood parts were found to be in good condition.

1670 INSTITUTE OF PAPER CHEMISTRY. 1952. Study of Deteriorated Redwood Specimens from Cooling Towers; . . . Progress Report 3 to the California Redwood Assoc., Appleton, Wisc. 1952. 69 p. Illus., tables. (Its Project 1561, Progress Report 3.)

Summary of results.

1671 LITTLE RIVER REDWOOD CO. 1928? Pipe Engineering. Little River Redwood Co., Crannell, Calif. 95 p. Illus., tables.

An excellent trade publication describing redwood pipes, flumes, tanks, etc., with engineering drawings, tables, and information on manufacturing and installation.

1672 MANSON, BYRNE C., and others. 1953. Cooling Tower Wood Maintenance Study. Calif. Redwood Assoc., Redwood Research Rpts. Research Project 5.31320-A-L. 92 p. Illus., tables.

An extensive study begun in 1950 to determine what types of deterioration occur, what causes them and what the rates of deterioration are under various operating conditions. It was participated in by various organizations interested in the problem. Other contributors were B. L. Browning of The Institute of Paper Chemistry, Willard E. Pratt, and Lawrence P. Terch. (Note: See also Institute of Paper Chemistry, 1952, Study of Deteriorated Redwood Specimens from Cooling Towers.)

1673 REDWOOD MANUFACTURERS CO. n.d. Remco Silos . . . Redwood Manufacturers Co. 22 p. Illus.

Gives instructions for the construction of silos.

Construction

1674 ANON. 1932. Largest Redwood Bridge. *Calif. Lumber Merchant.* 10:24. Feb. 1, 1932.

Manzanita Bridge on the Alto Highway, near Sausalito, Calif., built entirely of redwood. Article gives amount of redwood used in construction, the names of the eight mills that produced the lumber, and grades used.

1675 ANON. 1932. Redwood Bridge Material. *Timberman.* 33:101. Mar. 1932.

650,000 feet of redwood for erection of 15 highway bridges between San Diego and El Centro.

1676 ANON. 1933. Redwood Lumber for Yolo Causeway. State Printing Office, Sacramento. *Calif. Highways and Public Works.* March 1933. p. 29. Illus.

Six million feet of redwood was required for the structural lumber used in the widening project of the Yolo Causeway. The illustration is of a newly fallen redwood and the caption states: "It is 18 feet in diameter at the stump and by actual ring count was 2512 years old." (Note: Obtained by averaging rings in a few inches. A recount on May 10, 1933, gives 1460 plus 20-60 for the portion decayed. Hence the tree section is 1480-1520 years old instead of 2512 as stated in the article.)

1677 ANON. 1948. Two Redwood Houses Designed by F. L. Wright. *Arch. Forum.* 88:150-151. Jan. 1948. Illus., plan.

1678 BROWN, E. A. 1935. Redwood Bridges: Past and Present. *Timberman.* 36:18-19. Sept. 1935. Illus.

Illustrated with photographs of actual bridge details.

1679 BROWNE, J. H. 1915. Features of the Home Redwood. *Building Age and Builders Journal.* 37:36-40. Aug. 1915. Illus.

1680 CALIF. REDWOOD ASSOC. 1917? California Redwood Homes. [Calif. Redwood Assoc., San Francisco.] 16 p. Illus.

Trade literature, showing uses for construction and for interiors.

1681 CALIF. REDWOOD ASSOC. n.d. California Redwood Laminated Culverts. Calif. Redwood Assoc., San Francisco. 3 p. Illus., table.

Trade literature. Culverts built up from successive layers of redwood are said to be advantageous because of their economy, durability, comparative greater discharge capacity as compared with metal and concrete culverts, and resistance to fire and termites.

1682 CALIF. REDWOOD ASSOC. n.d. California Redwood on the Farm. . . . Calif. Redwood Assoc., San Francisco. 40 p. Illus.

"For everything the farmer builds . . ."

1683 CALIF. REDWOOD ASSOC. n.d. Home Inspirations in Redwood. Calif. Redwood Assoc., San Francisco. 20 p. Illus. In Calif. Redwood Assoc. Library, San Francisco.

Trade literature, primarily illustrating interiors as designed by specific architects.

1684 CALIF. REDWOOD ASSOC. 1915? The Home of Redwood. [Calif. Redwood Assoc., San Francisco. 42 p.] Illus.

Trade literature, showing the home "erected in the South Gardens of the Panama-Pacific International Exposition [at] San Francisco, 1915." The 21 companies of the Calif. Redwood Assoc. are listed, and the exhibits of redwood at the exposition are noted.

1685 CALIF. REDWOOD ASSOC. 1929. Mountain Cabins [and] Week-end Cottages. Calif. Redwood Assoc., San Francisco. 30 p. Illus.

Trade literature stressing durability, freedom from shrinkage, and fire resistance, and including 17 floor plans for small buildings designed to be constructed of redwood.

1686 CALIF. REDWOOD ASSOC. 1933. Naturally-Durable California Redwood in Modern Timber Structures. Calif. Redwood Assoc., San Francisco. 23 p. Illus.

Trade literature, primarily on highway and bridge construction. Well illustrated.

1687 CALIF. REDWOOD ASSOC. 1927. Redwood for Better Farm Structures. Calif. Redwood Assoc., San Francisco. 23 p. Illus. In Calif. Redwood Assoc. Library, San Francisco.

Trade literature stressing the durability of redwood, and including illustrated information on nursery and planting program.

1688 CALIF. REDWOOD ASSOC. 1925. Redwood Home Plans by California Architects. Calif. Redwood Assoc., San Francisco. 48 p. Illus. [4th rev. ed., 1929, 31 p.] In Calif. Redwood Assoc. Library, San Francisco.

Trade literature, containing drawings of and floor plans for 22 small all-wood houses.

1689 CALIF. REDWOOD ASSOC. 1919. Redwood Lattice Trusses. Calif. Redwood Assoc., San Francisco. 6 p. Illus.

Trade literature.

1690 CALIF. REDWOOD ASSOC. 1939? Structural Redwood. Calif. Redwood Assoc., San Francisco. 24 p. Illus.

Well illustrated trade literature.

1691 COCHRAN, H. M., and M. E. KLINE. 1931. Redwood Crib Construction. Calif. Redwood Assoc., [San Francisco]. 20 p. Illus. Processed.

Trade literature, emphasizing the fire resistance of redwood.

1692 DARWIN, A. GILBERT. 1933. Widening Yolo Causeway Near Sacramento. [Reprinted from] *Western Construction News and Highways Builder*. p. 133-135. March 10, 1933. Illus.

Piling and construction timber of this widening project for the 16,435 ft. causeway is largely of redwood.

1693 JOSEPHSON, H. R. 1935. Future Wood Requirements in California. U.S. Forest Serv. Calif. Forest and Range Expt. Sta. Jan. 1935. 180 p. Tables. Processed.

"This report deals chiefly with lumber requirements for urban and rural building construction, including requirements for residential, non-residential, and farm structures." Gives information on how data was collected, analyzed, and how predictions were made.

1694 MORTON, R. M., and E. L. GREENE. 1925. Redwood in Bridge and Road Construction. *Timberman*. 26:49. Feb. 1925. Illus.

Building plank roads across the sand dunes in Imperial Valley, Calif., by R. M. Morton. Calif. redwood for bridge construction across Big River at Mendocino, Calif., by E. L. Greene.

1695 THE PACIFIC LUMBER CO. 1920? California Redwood. The Pacific Lumber Co. [of Chicago, Ill. 14 p.] Illus.

Subtitled: "The Western wood for Eastern homes." Trade literature, giving the characteristics of redwood, and aimed at eastern markets.

1696 THE PACIFIC LUMBER CO. 1922. California Redwood. The Pac. Lumber Co., [of Chicago, Ill.] Illus.

Trade literature. Three brochures: 1. dated 1915, 34 p., giving general information on the wood, and showing various construction uses, with emphasis on the Leaver Curing Process, a kiln drying process exclusive to the company; 2. dated 1922, 16 p., with the subtitle "A Digest of the uses of California redwood for engineering and industrial purposes." 3. dated 1922?, 16 p., with the subtitle "A Construction digest of information on the values and uses of redwood and its adaptation to current design and practice in residential and industrial buildings." Well illustrated.

1697 PRATT, MERRITT B. 1918. The Use of Lumber on California Farms. Univ. of Calif., Agr. Expt. Sta., Berkeley, Calif. Bul. 299, Sept., 1918. p. 89-121. Illus.

Coast redwood discussed p. 106-108; durability, fire resistance, relation of qualities to use, use of proper grades. Contains a brief description of the grades, and the relation of grade and prices per M between grades, p. 98. Four references to publications on redwood.

1698 RICHARDSON, MRS. RALPH F. 1938. Artists' Barn. *Sunset*. 81:46. Sept. 1938. Illus.

Letter to the editor calling attention to a 35-year-old redwood barn in Fillmore, Calif., converted into a studio, gallery, and home by Mildred and Lawrence Hinckley.

1699 ZIMMERMAN, H. E. 1919. Church Built from One Tree. *Amer. Forestry* [*Amer. Forests*]. 25:1450. Nov. 1919. Illus.

In Santa Rosa, Calif. (See also *Press Democrat*, Centennial Edition, Santa Rosa, Calif., Oct. 1956. p. 8.)

Veneers and Plywood

1700 ANON. 1927. Cutting Redwood Veneer. *Timberman*. 28:133. Apr. 1927.

Replies to inquiries as to the best method to follow.

1701 ANON. 1932. Holland Buys California Redwood Plywood. *Timberman*. 33:69. Mar. 1932.

Western Plywoods Co. to ship 40,000 feet in March.

1702 ANON. 1926. A New California Veneer Factory. *Timberman*. 27: 132. May 1926.

News note on the Plywood Products Co. plant at Martinez, Calif., to cut redwood. Similar material in *Timberman*, 27:129; 28:137, July 1926/April 1927; also in *Amer. Lumberman*, 2689:52, Nov. 27, 1926.

1703 ANON. 1949. Now Redwood; M. & M. Wood Working Starts Production of Plywood. *Business Week*. p. 51-52+. Feb. 19, 1949.

1704 ANON. 1938. New Redwood Use; Plywood Panels. *Business Week*. p. 34. Feb. 26, 1938.

1705 ANON. 1927. Redwood Enters Field. *Timberman*. 28:136. Jan. 1927.

Redwood plywood production.

1706 ANON. 1888. Redwood for Veneering. *Humboldt Times Daily*, Eureka, Calif. 29 (43) : 1. Feb. 22, 1888.

Redwood stumps found to possess good qualities for this purpose; to replace more costly woods in the future.

1707 ANON. 1939. Redwood Plywood. *West Coast Lumberman*. [*Lumberman*]. 65:50, 52. March 1939.

Subtitle: A New forest product successfully produced in Harbor Plywood Mill.

1708 ANON. 1890. Redwood Veneers. *Pac. Coast Wood and Iron* [*Pioneer Western Lumberman*]. 14:54-55. Aug. 1890.

An established industry which is proving a great success.

1709 ANON. 1952. Rift Grain Redwood Plywood. *Malarkey Mag.*, M. & M. Wood Working Co., Portland, Ore. 1:1-3. Dec.-Jan. 1951-1952. Illus.

Illustrated article on M & M Wood

Working Company's new vertical grain sliced redwood veneer.

1710 ANON. 1955. Veneer Plant in Operation. *Noyo Chief,* Union Lumber Co., Fort Bragg, Calif. 7:4-8. Nov. 1955. Illus.

A series of photographs of the new Veneer Plant of the Union Lumber Co., showing the plant in operation.

1711 OSTLIND, B., G. OSGOOD, and P. J. LANDRY. 1927. Cutting Redwood Veneer. *Timberman.* 28:133. April 1927.

Brief notes on methods of cutting, in answer to an inquiry.

1712 U.S. FOREST SERV. FOREST PRODS. LAB. 1953. Veneer Cutting and Drying Properties: Redwood. Madison, Wisc. 7 p. Tables. (Its Report No. 1766-1768. Processed.)

Bark Utilization

1713 ANON. 1942. Clothing Fabrics from Redwood Bark. *Timberman.* 43:44. Feb. 1942.

News release announcing the experiments by Pacific Lumber Co. for combining redwood bark fiber with sheep's wool.

1714 ANON. 1920. Converting Redwood Bark into Pulp. *Pioneer Western Lumberman.* 73:7. March 1, 1920.

New invention will prevent waste of bark and provide for converting it into pulp.

1715 ANON. 1947. Drying Redwood Bark; Infrared Installation to Useful Commercial By-products; Sequoia Products Co. *Electrical West.* 98:88-89. April 1947. Illus.

1716 ANON. 1942. Ersatz: U.S.A. Model: Redwood Fiber. *Textile World.* 92:96. Feb. 1942.

1717 ANON. 1930. First Redwood Bark Recovery Plant Placed in Operation. *West Coast Lumberman* [*Lumberman*]. 57:29. Oct. 1930.

Description of the equipment including peeling, bark storage, shredding, drying and baling units installed by The Pacific Lumber Co., Scotia, Calif., to save material previously wasted.

1718 ANON. 1937. Redwood Bark Conversion. *West Coast Lumberman* [*Lumberman*]. 64:32. Dec. 1937. Illus.

Describes the bark conversion plant of The Pacific Lumber Company, Scotia, Calif. Two illustrations of dryers and baling press.

1719 ANON. 1948. Redwood Bark Derivative Now Available from Pacific Lumber Co. *Chem. Engineering.* 55:180+. Jan. 1948.

1720 ANON. 1942. Redwood Bark for Fabrics. *West Coast Lumberman* [*Lumberman*]. 69:11, 76. Feb. 1942. Illus.

News item on the development of bark refining for blankets, hats, felt, etc.

1721 ANON. 1916. Redwood Bark for Paper. *Timberman.* 18:39. Dec. 1916.

San Francisco firm will experiment with redwood bark in the manufacture of compo board.

1722 ANON. 1876. Redwood Bark for Pavements. *Humboldt Times Daily,* Eureka, Calif. 5(139):3. June 11, 1876.

John B. Wood of Santa Rosa obtains patent for an improved pavement made of the bark of trees, especially redwood. Description of method of using the bark for this purpose.

1723 ANON. 1937. Redwood Bark Insulation. *Timberman.* 38:30. Feb. 1937. Illus.

1724 ANON. 1922. Redwood Bark Used in Manufacturing Felt. *Amer.*

Lumberman. 2465:73. Aug. 12, 1922. Illus.

Photograph showing a steam operated ax which chops the bark, preparing it for the shredder in the pulping process.

1725 ANON. (J. D. O'Dell.) 1937. Redwood By-products. *Business Week.* p. 30, 32. Sept. 4, 1937. Illus.

Primarily on the salvage of bark for insulation wool.

1726 ANON. 1943. Redwood Fiber Fills War Needs. *Textile Colorist.* 65: 299. July 1943.

1727 ANON. 1942. Redwood Textile; Fiber from Bark Now Being Sold by Pacific Lumber Co. for Mixing with Wool. *Business Week.* p. 55-56. Jan. 17, 1942.

1728 ANON. 1925. Stack System for Peeling Redwood Bark. *Timberman.* 26:110-111. June 1925. Illus.

Mechanical bark peeler invented by Emmet Stack is suitable for use in sawmill log pond, and permits bark salvage. Diagram of the machine.

1729 ANON. 1929. Uses of Shredded Redwood Bark. *Timberman.* 30: 162. Oct. 1929.

Gives the insulating properties of shredded redwood bark as a product manufactured by the Eureka Fibre Co.

1730 BRAUNS, F. E., and H. F. LEWIS. 1944. The Nature of the Lignin in Redwood Bark. *Paper Trade J.* 119:34-38. Nov. 30, 1944. Tables.

The chemical composition of bark fiber and dust. (Note: See also The Institute of Paper Chemistry, 1946, *Redwood.)*

1731 BROWN, NELSON COURTLAND. 1937. Timber Products and Industries. John Wiley & Sons, Inc. New York. 316 p.

Text book, with a note on the utilization of redwood bark for insulation felt, p. 289-290.

1732 CARSON, FRANCIS L. 1934. Paper and Board Manufacture from Redwood Bark. In *Chem. Abstracts.* 29:344. Jan. 1935.

U.S. Patent No. 1,979,864 (assigned to Pacific Lumber Co.), Nov. 6, 1934. "The shredded bark is suspended in a viscous liquid medium such as a starch or gilsonite solution and the suspension is conveyed to a filter screen or plate."

1733 JONES, N. C. 1940. Cold Storage Insulating Material from Forest Waste; Redwood Bark Wool. *Chemistry and Industry* (London). 59:69-70. Feb. 3, 1940.

1734 KASWELL, E. R. 1944. Quantitative Determination of Redwood Bark Fiber in Wool-redwood Fabrics. *Amer. Dyestuff Reporter.* 33: 237-238. May 22, 1944.

1735 KOTTWITZ, FRANK A., and LOREN V. FORMAN. 1948. Sodium Palconate Production. *Industrial and Engineering Chem.* 40:2443-2450. Dec. 1948. Illus., tables.

"Pilot plant production of powdered sodium palconate by alkaline extraction of redwood bark dust followed by concentration and spray-drying of the extract was conducted to extend laboratory methods and prove a tentative process for preparation of the caustic extract, to obtain samples of the material for field testing, and to provide engineering data for use in the design and operation of a commercial plant. Flow sheets and descriptions of the equipment, process, and material are included in this paper."

1736 KURTH, E. F. 1947. The Chemical Composition of Barks. *Chem. Revs.* 40:33-49. Feb. 1947. Tables.

Includes analyses of redwood bark fiber and dust. List of references, p. 47-49.

1737 LEWIS, HARRY F. 1949. Utilization of Redwood Bark. Forest Prod. Research Soc., Madison, Wisc. *Proc.* 3:179-187.

"This paper summarizes the work done to date on the utilization of redwood bark by The Institute of Paper Chemistry and The Pacific Lumber Company. The mechanical separation of the bark into 'fiber' and 'dust' fractions and the chemical and physical properties of the fractions are given. Experiments on the use of bark fiber in low quality papers, as fillers, for plastics, loose-fill insulation, and textiles, are described. The use of the 'dust' fraction as a filler for plastics and as a substitute for peat moss and problems involved in such use are given. The low methoxyl content of redwood bark lignin as compared to the methoxyl content of wood lignin and the production of sodium palconate from the acid fraction of the bark are likewise described." Comments by E. Fritz, p. 185-187.

Similar material in *Paper Tr. J.* 130:18—20+. April 6, 1950.

1738 LEWIS, HARRY F., and MARION A. BUCHANAN. 1954. Redwood Bark Cooking Process. In *Chem. Abstracts*. 49:6606b. May 10, 1955.

U.S. Patent No. 2,698,233 (assigned to Pacific Lumber Co.) Dec. 28, 1954. "Comminuted redwood bark is cooked with an aq. alkali sulfite liquor until the bark acids are solubilized, and then the fibers are sepd. from the liquor. For example, about 100 parts by wt. bark is cooked at 160° for about 1.5 hrs. in about 500 parts liquor contg. 15 parts Na_2SO_3. The resulting fibers can be mixed with other redwood bark fiber and formed into an insulation board. Redwood bark dust can be treated in a similar process, and the resulting liquor used as an oil drilling mud additive."

1739 LEWIS, H. F., and others. 1944. Chemical Composition of Redwood Bark. *Industrial and Engineering Chem.* 36:759-764. Tables.

F. E. Brauns, M. A. Buchanan, and E. F. Kurth, joint authors.

1740 LODIAN, L. 1905. Some Curious Uses of American Woods. *Sci. Amer.* 93:375. Nov. 11, 1905.

Popular article on the use of redwood bark for such novelties as pin cushions, pen wipers, mats, and cork. (Pin cushions sold as novelties, actually made from Sierra redwood bark, rather than from that of the denser Coast redwood bark. E.F.)

1741 LUTTRINGHAUS, H. 1943. Dyeing of Redwood Fibers. *Rayon Textile Monthly* [*Modern Textiles Magazine*]. 24:489-490. Sept. 1943.

1742 McMILLAN, U. S. 1917. First Commercial Use of Redwood Bark [for paper]. *Calif. Forestry*. 1:6, 7. May 1917.

1743 McNAUGHTON, G. C., and C. A. HARRISON. 1940. Fire-resistance Tests of Plywood-covered Wall Panels. U.S. Forest Serv. Forest Prod. Lab., Madison, Wisc. Mimeo. R1257. 22 p. Illus., tables. Processed.

Includes data on the use of redwood bark for insulation; gives it a rating of 45 minutes as against 10 for no insulation.

1744 MANSON, BYRNE C. 1950. Derived Products from Redwood Bark. Calif. Redwood Assoc., Redwood Research Rpts. Research Project 3.82312-A. 2 p. Processed.

Preliminary investigation to determine suitability of crude redwood bark for block type insulation material.

1745 MANSON, BYRNE C. 1950. Derived Products from Redwood Bark. Calif. Redwood Assoc., Redwood Research Rpts. Research Project 3.82421-A. 2 p. Processed.

Preliminary chemical treatments of redwood bark.

1746 THE PACIFIC LUMBER CO. 1948. Cold Storage Manual. The Pacific Lumber Co., San Francisco & Scotia, Calif. 11 p. Illus. Trade Bulletin.

Contains extensive data and building plans on the use of redwood bark fiber for insulation purposes. Similar material in Frozen Food Locker Plant Manual by the same company.

1747 ROEDEL, E. 1943. The Redwood. Redwood Fibre Products Co., Inc., Santa Cruz, Calif. 34 p. Tables, biblio. Processed.

A compilation, with stress on bark, by the chemist of the company, prepared for use in promoting bark products. A fairly complete description from forest to products, including brief sections on chemical properties, resistance, production, reproduction, and logging practices.

1748 SAMETH, SIGMUND. 1942. New Products from Redwood. *Amer. Forests*. 48:316-318, 336. July 1942. Illus.

Describes the uses of shredded bark for insulation, textiles.

1749 SEGALL, G. H., and C. B. PURVES. 1946. Chemical Composition of Wood Barks. *Pulp & Paper Mag. of Canada*. 47:149-162. Convention Issue, 1946. Tables.

Includes Coast redwood bark fiber and dust. List of literature cited.

1750 SIMONS, E. 1955. In-place Test Studies of Insulated Structures; Redwood Bark Fiber Insulation. *Refrigerating Engineering*. 63:40-71. Feb. 1955. Illus., biblio.

1751 SIMONS, E. 1952. In-place Wall Tests of Redwood Bark Fiber Insulation. *Refrigerating Engineering*. 60:371-377+. April 1952.

1752 SIMONS, E. 1951. Redwood Bark Fiber Insulation; Its Properties and Application. *Refrigerating Engineering*. 59:782-787. Discussion 787+. Aug. 1951. Illus., biblio.

1753 WACEK, A. V., and A. SCHÖN. 1941. The Chemical Composition of Tree Barks. *Holz als Roh- und Werkstoff*. 4:18-26. Jan. 1941. [In German.]

Includes redwood bark.

1754 WAY, DAVE. 1946. New Outlets for Redwood Fibre. *Timberman*. 47:126, 128. Sept. 1946. Illus.

Utilization of bark for plastic shingle boards and fibre; dust for mulch.

1755 WEISS, HOWARD F. 1920. Fibrous Product. *Official Gazette of the U.S. Patent Office*. 277:242.

Patent No. 1,349,112 for the separation, washing, and drying of redwood bark fibers.

1756 WILLIAMS, JONAS. 1946. Miracle Bark. *Collier's*. 117:79. June 15, 1946. Illus.

Description of the bark of redwood and its use as a soil conditioner. Popular.

Miscellaneous Products

1757 ANON. 1929. Big Scotia Mill Makes Redwood Specialties. *Western Wood Worker and Furniture Mfgr*. 3:11. Nov. 1929. Illus.

Primarily on the manufacture of specialty goods such as window boxes and flower pots at The Pacific Lumber Co. mill, Scotia, Calif.

1758 ANON. 1877. [Export of Redwood Stumps for Furniture.] *Pac. Rural Press* [*Calif. Farmer*]. p. 34. Jan. 20, 1877.

Letter to the editor.

1759 ANON. 1935. Fancy Redwood Box Industry. *West Coast Lumberman* [*Lumberman*]. 62:22. April 1935. Illus.

Redwood specialty boxes made by Calif. Redwood Box Co. of Oakland, Calif., and Wooden Box Novelty Co., San Francisco.

1760 ANON. 1923. The Foresters' Circle at the University of California. *Lumber World Review* [*Chicago*

Lumberman]. 44(2):43. Jan. 25, 1923.

Meeting place for the Forestry Club. A campfire circle of seats hewn from logs.

1761 ANON. 1915. Hollowed Redwood Logs. *Forestry Quarterly* [*J. of Forestry*]. 13:426. Sept. 23, 1915.

Used for water piping sixteen years; after ten years exposure were relaid, and are expected to be serviceable for many years.

1762 ANON. 1934. New Type Board Sales Increasing. *Timberman*. 35:36. Oct. 1934.

Five-ply board is constructed of 3/16 inch redwood lath covered on both sides with tough cardboard. Increase of more than 100 per cent over previous year.

1763 ANON. 1932. Oakland Casket Manufacture. *Timberman*. 33:112. April 1932.

Four firms use redwood exclusively in production of caskets.

1764 ANON. 1925. Redwood Block Floor for Various Uses. *Engineering and Contracting (Buildings)*. 64:202. July 22, 1925.

1765 ANON. 1927. Redwood Block Floors. *Calif. Lumber Merchant*. 6:46-47. Aug. 15, 1927. Illus.

The characteristics and advantages of using the wood for this purpose.

1766 ANON. 1937. Redwood Center Curbs. *Engineering News-Record*. 119:726. Oct. 28, 1937. Illus.

1767 ANON. 1934. Redwood Logs Used for Fills on California Highway. *Engineering News-Record*. 113:500-501. Oct. 18, 1934. Illus.

1768 ANON. 1937. Redwood Motor Fuel: California Company Experiments with Charcoal Gas to Drive Trucks. *Business Week*. p. 18. Dec. 25, 1937.

1769 ANON. 1914. Redwood Sawdust Preserves Grapes. *Pioneer Western Lumberman*. 61:23. June 1, 1914.

Successful packing of grapes in redwood sawdust has increased domestic and foreign trade.

1770 ANON. 1927. Sandblasted Redwood. *Timberman*. 28:96. Apr. 1927.

For decorative purposes.

1771 ANON. 1939. Sunset Gold. *Sunset*. 83:4, 6. Oct. 1939.

Two letters to the editor, one commenting on the redwood street baskets used as decorations in Fortuna, Calif., and the other a short poem on redwoods and fog.

1772 CALIF. REDWOOD ASSOC. 1918. California Redwood Block Paving and Flooring. Calif. Redwood Assoc., San Francisco. 12 p. Illus.

Also lists mechanical properties of redwood. Similar material in *Timberman*, 20:37, Dec. 1918.

1773 EVERETT, HENRY B. 1951. Redwood Particles as a Soil Conditioner. Calif. Redwood Assoc., Redwood Research Rpts. Research Project 5.2111-A. [6] p.

Test procedures.

1774 FLAHERTY, F. F. 1935. Making Pres-to-log Fuel from Redwood Waste. *Timberman*. 36:13-14. Jan. 1935.

Subtitle: Two machines making 20 tons daily taxed to meet demand for this modern type of log fuel.

1775 GEIGER, C. W. 1919. New Piers Built of Redwood. *Amer. Lumberman*. 2297:50-51. May 24, 1919. Illus.

1776 MILLER, ROBT. W. 1954. By-products from the Redwood Lumber Industry. Pacific Lumber Co., Scotia, Calif., 1954. 9 p. Processed.

Paper presented at the 1954 Fall Meeting of the Forest Products Research Society, Northern California Section.

1777 MOULTON, ROBERT H. 1918. Motor Car House Built of One Piece of Redwood Weighing Three Tons. *Amer. Forestry* [*Amer. Forests*]. 24:528-530. Sept. 1918. Illus.

Story of Charles Kellogg and the motor-car house he built of a fallen redwood. (See also Anon. 1915.)

1778 PEAKES, L. V., JR., and others. 1946. Wood for Storage Battery Separators. *Industrial and Engineering Chem.* 38:780-788. Aug. 1946. Illus.

1779 PRATT, WILLARD E. 1952. Pencil Stock. Calif. Redwood Assoc., Redwood Research Rpts. Research Project 3.81320-A. [1] p.

Redwood as a possible substitute wood in pencil manufacturing.

1780 RUTH, R. M. 1939. Wood for Hot Line Protection. *Electrical World.* 112:1856-1857+. Dec. 30, 1939. Illus.

1781 THOMPSON, A. D. 1937. Hewn from Redwood. *Sunset.* 79:5. Oct. 1937. Illus.

Letter to the editor describing a 71-year old statue carved from redwood on the roof of the Masonic Hall in Mendocino, Calif., built in 1866.

RECREATION AND AESTHETICS

AESTHETICS

1782 BADÈ, WILLIAM F. 1924. The Life and Letters of John Muir, vol. 2. Houghton Mifflin Co., Boston & New York. 454 p. Illus., index.

Muir in a letter written in 1877 said he was about to begin a careful study of the southern belt of redwood, p. 68. (Likely Sierra redwood.)

1783 BAKER, RICHARD ST. BARBE. 1935. Among the Trees. Printed by John Swain & Son, Ltd., London. 97 p. Illus.

Chapter 14, "The Longest Living Trees on Earth," p. 62-66, treats both redwoods poetically.

1784 BAKER, RICHARD ST. BARBE. 1945. The Redwoods. L. Drummond, Ltd., London. 96 p. Illus.

Description of the trees and forests of Coast and Sierra redwood by a tree enthusiast and sentimentalist.

1785 BROWN, PATRICIA. 1928. In Redwood Canyons Lies Beautiful Contentment. *Overland Monthly.* 86 (ser. 2):68-71, 86, 91. March 1928. Illus.

"Prose Word." Describes the beauty of the forest and the flowers of the region.

1786 BRYANT, HAROLD CHILD. 1929. Outdoor Heritage. Powell Pub. Co., Los Angeles. 465 p. Index, biblio.

Many references to redwood, including popular descriptions of the tree and forest, comparison with Sierra redwood, the associated species and flora of the region, and parks.

1787 COONAN, J. F. 1910. Uncle Sam's Most Western City. *Sunset Mag.* p. 355-358. March 1910. Illus.

Includes brief description of Humboldt redwoods.

1788 HIESTAND, O. O. 1929. Redwoods. *Overland Monthly.* 87 (ser. 2):214. July 1929.

An impression of the tranquility of the redwood forest.

1789 HILDEBRAND, J. R. 1939. California's Coastal Redwood Realm. *Natl. Geog. Mag.* 75:133-184. Feb. 1939. Illus., maps.

Contains many interesting facts about the region, the tree, and the timber. Accompanied by 17 natural color photographs by B. Anthony Stewart.

1790 HOWELL, A. BRAZIER. 1928. Redwood Shadows. *Nature Mag.* 12:240-241. Oct. 1928. Illus.

The author describes four aspects from which redwoods may be viewed at their best.

1791 JAMES, GEORGE W. 1914. California, Romantic and Beautiful. . . . Page Co., Boston, [1921, c1914]. 433 p. Illus., index.

Mentions the redwoods at Boulder Creek in the chapter, "The Forests of California."

1792 KNIGHT, EMERSON. 1933. Forest Theatres. *Amer. Forests.* 39: 243-246, 285. June 1933. Illus.

General discussion of the forest theater. Among those mentioned and described are the Bohemian Grove Theater and the Family Club in the redwoods, and suggestions for more theaters in ideal locations of the State redwood parks.

1793 MERRIAM, JOHN C. 1938. Application of Research to Problems in Conservation. Carnegie Inst. of Wash., *Year Book No. 37.* p. 310-311.

Brief reference to a study by the author of the human values inherent in the redwood forests, and authorized by the Save-the-Redwoods League.

1794 MERRIAM, JOHN C. 1943. The Garment of God; Influence of Nature in Human Experience. Chas. Scribner's Sons, New York. 162 p.

Includes comments on the saving of redwood forests.

1795 MUIR, JOHN. 1901. Hunting Big Redwoods. *Atlantic Monthly.* 88: 304-320. Sept. 1901.

Primarily concerned with Sierra redwood; Coast redwood mentioned only as the other extant species.

1796 NEWS AND VIEWS. 1943+. [A publication of . . .] Calif. Dept. of Natural Resources. Div. of Beaches and Parks. v.p. Illus. Processed.

Contains brief articles and notes on State parks and beaches, including occasional items on the redwood region. Published monthly. Note: Articles of special interest have been cited separately.

1797 PEATTIE, DONALD CULROSS. 1946. Footsteps of Spring—A Wild Flower Trail. In *The Pacific Coast Ranges.* Vanguard Press, New York. p. 45-75. Illus.

Description of the redwood tree and forest, p. 59-65.

1798 POWERS, ALFRED. 1949. Redwood Country; The Lava Region and the Redwoods. Duell, Sloan & Pearce, New York. 292 p. Map.

Combines the Lava region of the Modoc country of N.E. Calif. with redwood region.

1799 REINHARDT, AURELIA H. 1935. Garden Club of America's Redwood Grove. Eucalyptus Press, Mills College, Calif. 10 p.

An address before the Garden Club of America dedicating the Grove, and eulogizing the grandeur of redwood.

1800 WEAVER, HARRIET E. 1948. The Giant Redwoods. Three Raccoons Press, Fillmore, Calif. 16 p. Illus.

The author was formerly a nature guide at Richardson Grove. The booklet concerns both Coast and Sierra redwood.

1801 WILDMAN, ROUNSEVELLE. 1895. Wellworn Trails: 5. Among the Redwoods. *Overland Monthly.* 26 (ser. 2): 494-501. Nov. 1895. Illus.

Article tends to exaggerate fire resistance and age of trees.

TRAVEL AND RECOLLECTIONS

1802 ANON. 1858. Reminiscences of Mendocino. *Hutchings' Calif. Mag.* 3:146-160, 177-181. Oct. 1858. Illus.

"Extracts from a manuscript in German, entitled 'Ten Days in Mendocino!'" Description of the size and beauty of the redwoods, the effects of fire on the undergrowth and the trees in terms of hollow trunks, sprouting, and some material on the Indians of the area.

1803 ANON. 1937. Travel and Outdoors: Pacific Coasting on the San Simeon-Carmel Highway. *Sunset.* 79: 8, 10-11. July 1937. Illus.

Travelogue, mentioning the redwoods of the Pfeiffer Redwoods State Park and along the Big Sur River.

1804 BONNER, W. G. 1901. The Trail in the Redwoods. *Overland Monthly.* 37 (ser. 2): 1061-1067. June 1901. Illus.

Account of a horseback trip into the redwoods.

1805 CANBY, HENRY SEIDEL. 1915. The Last Stand of the [Sierra] Redwoods. *Harper's Mag.* 131:46-58. June 1915. Illus.

Description of the expedition of Prof. Ellsworth Huntington (1912) to take increment borings near Hume, Calif. Includes description of a logging camp and the loggers. (Sierra redwood.)

1806 CARRIGHAR, SALLY. 1941. Exploring Marin: Sir Francis Drake Highway. Printed by the Sausalito News, Sausalito [Calif.]. 16 p. Illus., map.

Published for the Marin Conservation League. Contains several references to redwood along the route from Greenbrae to Pt. Reyes.

1807 CHASE, JOSEPH SMEATON. 1913. California Coast Trails. Houghton Mifflin Co., Boston & New York. 325 p. Illus., index.

Subtitled: A Horseback ride from Mexico to Oregon. Author makes many mentions of redwood, from the Santa Lucia Mountains northward.

1808 DICKINSON, FRANK G. 1954. The Day That Was Full of Vacation. *Today's Health.* 33:22, 54-58.

The author describes a trip through the redwoods 27 years after his first visit; written with an aesthetic and philosophical approach.

1809 DIGBY, GEORGE. 1940. Under the Redwood Trees. E. P. Dutton & Co., New York. 285 p.

Informal account of the experiences and impressions of an English author and his bride who journeyed across the U.S. in an ancient Ford, and rented a log cabin in the redwood forests of northern California.

1810 DRURY, AUBREY. 1938. Ho! for Humboldt. *Motorland.* p. 7-8, 26. May 1938. Illus.

A description for tourists of the beauties, including the redwood forests, of Humboldt County.

1811 EVANS, SAMUEL M. 1911. The Cave Man's Christmas Tree. *Sunset Mag.* 27:653-663. Dec. 1911. Illus.

Account of an auto trip through redwood regions. Illustrated with halftones and color plates.

1812 HITTELL, JOHN S. 1885. Hittell's Hand-book of Pacific Coast Travel. A. L. Bancroft & Co., San Francisco. 263 p.

Description of travel through California, with particular reference to the Santa Cruz redwoods on p. 112.

1813 HUTCHINGS, JAMES M. 1856. Packing in the Mountains of California. *Hutchings' Calif. Mag.* 1: 241-249. Dec. 1856. Illus.

Reference is made to a large portion of the trail between Jacksonville and Crescent City through the redwoods, including mention of a hollow tree 30 ft. in diameter, which provided camping site and shelter to the pack trains, p. 246.

1814 HUTCHINGS, JAMES M. 1860. A Ride to the Redwoods. *Hutchings'*

Calif. Mag. 5:33-45. Aug. 1860. Illus.

Account of an overnight or 3-day trip by carriage from San Francisco down the Peninsula to a new sawmill owned by Mills and Franklin, on the Coast Range near Redwood City. About 15-20 M feet of lumber cut per day; hauled to Redwood City and then to San Francisco where it wholesaled for $20 M feet. Logging and milling cost $8 per M, transportation by ox teams to Redwood City, $5 per M, and then $2.50 per M to San Francisco. This left $4.50 for overhead, profits, and the like.

1815 JOHNSON, ARTHUR T. 1913. California: An Englishman's Impressions of the Golden State. Duffield & Co., New York. 346 p. Index.

The author describes the beauty of the tree, and is very critical of Americans for permitting lumbering, p. 207-213.

1816 KROUPA, B. 1890. An Artist's Tour. Ward & Downey, London.

Gleanings and impressions of travel in North and Central America, and the Sandwich Islands. Impressions of the redwoods visited by the author, p. 41-44.

1817 LANE, D. R. 1955. Giant Trees Stand Watch as the Centuries Roll on Their Endless Way in the Redwood Empire. *Motorland.* 76:2-17. May-June 1955. Illus.

Well-written travelog describing the coast and redwood region from San Francisco to Oregon, including a description of the trees and flora of the region, many of the parks, and places of interest along the way such as Fort Ross, various mills, and recreation spots. Photographs are both full color, and half-tones.

1818 MEYER, CARL. 1855. Bound for Sacramento; Travel-pictures of a Returned Wanderer, transl. from the German by Ruth Frey Axe. Saunders Studio Press, Claremont, Calif., 1938. 282 p.

Description of the author's travels in California. He makes several references to the size and age of redwood, but felt in them "an oppressive feeling, like that of a prisoner who has learned that he will soon be set free and every moment awaits the opening of the portals. It is true that the most interesting pictures are presented to the imagination by the supernatural size, the tremendous primitive strength, the hoary grey age of the trees and the wonderful abundance of organic life . . . but one soon becomes fatigued when one realizes that this wandering will take up the whole day." p. 199. (Note: Meyer's locale is apparently the region between Trinidad and Klamath.)

1819 MORRIS, EDNA L. 1920. In the Heart of Our Redwoods. *Overland Monthly.* 76 (ser. 2):59-60, 89. July 1920.

1820 NEWTON, A. EDWARD. 1934. A Tourist in San Francisco. *Atlantic Monthly.* 153:115-124. Jan. 1934.

A well-written popular description and appreciation of the redwoods; tells of a trip to Scotia as guest of A. Stanwood Murphy, president of Pacific Lumber Co., p. 118-120.

1821 RIDPATH, JOHN CLARK. 1888. Beyond the Sierras; A Tour of 60 Days Through the Valleys of California. Amer. Horticultural Soc. *Trans.* 5:235-350.

Descriptive of a journey, with brief reference to Coast redwood on p. 298-299, mostly decrying their destruction.

1822 STERLING, E. A. 1915. California Tree Novelties. *Amer. Forestry* [*Amer. Forests*]. 21:853-860. Aug. 1915. Illus.

Popular descriptions of many trees and their characteristics, designed to increase interest in travel; many references to both redwoods, including wind-flattened trees on exposed slopes of the southern limit of the range.

1823 STEVENSON, ROBERT LOUIS. 1883. The Silverado Squatters.

Chatto & Windus, London. 254 p. [Also in other eds.]

Contains several references to redwood in Sonoma County, particularly the cutting of them, on a trip to the Petrified Forest from Calistoga Springs. The author comments: "Redwoods and redskins, the two noblest indigenous living things, alike condemned."

1824 TODD, JOHN. 1884. California and Its Wonders. New ed. T. Nelson & Sons, London. 208 p. Illus.

"On that western side of the mountains, amid the fogs, grows that remarkable tree the 'redwood,' often yielding boards six feet wide. It is a species of cedar, and is more used in building houses than all other woods put together." p. 22.

1825 VRIES, HUGO DE. 1905. In Het Land der Redwoods. In *Naar Californië,* vol. 1, p. 283-322. H. D. Tjeenk Willink & Zoon, Haarlem. Illus. [In Dutch.]

Includes a chapter on the redwoods, and an excursion with the Sempervirens Club.

1826 WEST, MRS. 1937. Travel and Outdoors: Pacific Coasting Along the Shoreline Highway. *Sunset.* 79:6, 8-9. Nov. 1937.

Brief article describing a trip up the Coast, mentioning Fort Ross and the Redwood Highway.

PRESERVATION OF THE REDWOODS

1827 ANON. 1938. Avenue of Giants. *Sunset.* 81:15. Dec. 1938.

Brief note on the Redwood Highway, and the work of the Save-the-Redwoods League.

1828 ANON. 1944. The Brothers Drury. *Calif. Monthly.* 52:14-16, 37-39. May 1944. Illus.

Biographical account of Newton and Aubrey Drury, with notes on their work for the Save-the-Redwoods League. Portraits of both.

1829 ANON. 1913. Carson Park Site Meets with Favor. *Humboldt Standard Daily,* Eureka, Calif. 42(265):1. Nov. 10, 1913.

Federated Commercial Bodies of Humboldt Co. endorse Carson tract of redwoods as the site for the proposed park.

1830 ANON. 1926. Does the Public Want It? *Sat. Evening Post.* 198:42. Jan. 9, 1926.

Editorial stating that failure to save the Dyerville-Bull Creek Unit and the Smith River-Mill Creek areas "would reflect for all future time upon the intelligence of the American people." (Note: Also reprinted in the *Annual Report, 1925-1926,* of the Save-the-Redwoods League, p. 18-19.)

1831 ANON. 1889. The Fate of the Redwoods. *Pac. Coast Wood and Iron* [*Pioneer Western Lumberman*]. 11:150. June 1889.

Claimed to be the same as that of the bear and the elk, former denizens of Calif.

1832 ANON. 1914. An Ideal Grove for a National Park. *Pioneer Western Lumberman.* 61:21-23. Jan. 15, 1914.

Tract of redwoods in Humboldt Co. known as "Carson Woods" is considered ideal for a possible national park.

1833 ANON. 1890. Land at Guerneville Deeded to Californians. *Humboldt Times Daily,* Eureka, Calif. 34 (24):2. July 29, 1890.

Col. Armstrong of Sonoma County prepares to convey through a "board of trustees," a gift of 600 acres—400 of which is virgin redwood forest.

1834 ANON. 1926. The Redwood Crisis. *Sat. Evening Post.* 199:22. Dec. 25, 1926.

An editorial about the negotiations to preserve the Bull Creek and Dyerville groves.

1835 ANON. 1913. Redwood Park Resolutions Adopted by Women's

Clubs. *Humboldt Standard Daily,* Eureka, Calif. 42(265):2. Nov. 10, 1913.

Efforts being made to secure a commission to look into the feasibility of obtaining a national park in Humboldt County.

1836 ANON. 1918. Redwood to Last 100 Years. *Timberman.* 19:70. Jan. 1918.

Increased production endangering redwood forests.

1837 ANON. 1922. The Redwood Trees of California. *Science.* 56(new ser.): 302-303. Sept. 15, 1922.

Brief statement of what has been done to preserve the groves of redwood, and the aims of the Save-the-Redwoods League.

1838 ANON. 1920. Save the Redwood Trees. *Pacific Rural Press* [*Calif. Farmer*]. 99:539. March 27, 1920.

1839 ANON. 1925. Save-the-Redwoods League Seeks 10,000-Acre Reservation. *Amer. Forests.* 31:756. Dec. 1925.

Brief note telling of the League's plans to acquire the Bull Creek-Dyerville Flat area.

1840 ANON. 1908. School Children Petition Preservation of California's Redwoods. *J. Education.* 67:278. Mar. 5, 1908.

Eureka, Calif., children petition for a national forest.

1841 ANON. 1903. Sempervirens Club. *Club Life.* 1(12):3. April 1903.

This club pledges itself not only to the preservation of the *Sequoia gigantea* and *Sequoia sempervirens* throughout the state but also to the promotion of the general interests of scientific forestry in California.

1842 ANON. 1935. The Story of State Parks: Saving the Redwoods. *Amer. Forests.* 41:478. Sept. 1935. Illus.

Brief note on the work of the Save-the-Redwoods League.

1843 ANON. 1932. Where All Is Peace. *Sat. Evening Post.* 204:24. Jan. 9, 1932.

Editorial in appreciation of the gift of money to purchase the Dyerville-Bull Creek Unit.

1844 ALBRIGHT, HORACE M., with FRANK J. TAYLOR. 1953. How We Saved the Big Trees. *Sat. Evening Post.* 225:31-32, 107-108. Feb. 7, 1953. Illus.

Article on the role of the National Park Service and the Save-the-Redwoods League in the preservation of Coast and Sierra redwood groves and forests. Includes a full-page colored photograph of Sierra redwood.

1845 BADE, WILLIAM FREDERIC. n.d. The Last Stand of the Giants. Reprinted by permission. *Public Spirit Mag.* [Berkeley? Calif.] 3 p.

A plea for saving the redwoods from lumbering, with particular emphasis on the Bull Creek and Dyerville Flat area in Humboldt County.

1846 BARNARD, JACK R. 1949. Butano Forest Can Still Be Saved—With Your Help. *Sierra Club Bul.* 34:16-19. Jan. 1949. Illus.

Refers to the acquisition of Butano Forest in San Mateo County for a State Park. (Note: The author wrote to the editor of *Pacific Discovery,* 2:28-29, March-April 1949, on saving Butano Forest and the South Calaveras Grove of Sierra redwood, and included a letter signed by Philip A. Munz, Director, Rancho Santa Ana Botanic Garden, urging their preservation.)

1847 BLYTHE, SAMUEL G. 1919. The Last Stand of the Giants. *Sat. Evening Post.* 192:8-9, 149-150, 153. Dec. 6, 1919. Illus.

An appeal to save the redwoods from destruction by lumbering, especially to save those finest and most accessible trees along the highways. The author credits the timber owners with being willing to aid in a movement to set aside the finest groves, but states that they are economically dependent upon them. The objects of the Save-the-Redwoods League are given, together with what has been accomplished and the men heading the movement.

1848 BURCHARD, GEORGE. 1920. Save the Redwoods. *Outlook* [*New Outlook*]. 124:428-429. March 10, 1920. Illus.

Tells of the interest of Theodore Roosevelt in "preserving representative bodies of the Coast and Sierra sequoias." Gives salient facts about redwood, and what the Save-the-Redwoods League had done and was attempting.

1849 CHANEY, RALPH W. 1945. John Campbell Merriam. Amer. Philosophical Soc., Phila. *Yearbook*. p. 381-387.

A biographical sketch. Contains notes on Dr. Merriam's contribution to the Save-the-Redwoods League, p. 385-386.

1850 DENNISON, W. E. 1913. State Should Own Redwoods. *Humboldt Standard Daily*, Eureka, Calif. 42(209):1. Sept. 4, 1913.

Letter to the Humboldt Development Committee urges preservation of redwoods on Eel River.

1851 DRURY, AUBREY. 1949. Saving the Redwoods. *Pac. Discovery*. 2:25-30. Sept.-Oct. 1949. Illus.

Article on the work of the Save-the-Redwoods League in the preservation of several areas, and the need for continued effort toward acquisition. Photographs include two of the Roosevelt elk.

1852 DRURY, NEWTON BISHOP. 1929. The Redwood Highway. In *Amer. Civic Annual*, Amer. Civic Assoc., Washington, D.C., vol. 1, p. 111-114.

Gives a brief history of the founding of the Save-the-Redwoods League, and its work toward the preservation of the Coast redwood.

1853 DRURY, NEWTON BISHOP. 1938. Transmuting Science into Conservation. [Reprinted from] *Cooperation in Research*, Carnegie Inst. of Wash., Wash., D.C. Pub. No. 501. p. 753-763.

Subtitled: An Account of the part taken by Dr. John C. Merriam in preserving the redwoods of California.

1854 DRURY, NEWTON B., AUBREY DRURY, and JOHN C. MERRIAM. 1943. Coast Redwoods Our Forest Marvels. *The Living Wilderness*. 8:2-19. May 1943. Illus., maps.

A series of articles on the work of the Save-the-Redwoods League: N. B. Drury, "Introduction"; A. Drury, "The Avenue of the Giants and Beyond"; J. C. Merriam, "The Redwoods and the War."

1855 FISHER, RICHARD T. 1902. Big Trees of California. *World's Work*. 3:1714-1723. Feb. 1902. Illus.

Primarily on saving the Sierra redwood groves, with only brief mention of Coast redwood.

1856 FRITZ, EMANUEL. 1952. Recommendations for Accelerating the Acquisition of Redwood Lands for State Parks. Berkeley, Calif. 2 p. Processed.

Presented to the Save-the-Redwoods League Council, Oct. 23, 1952.

1857 FRITZ, EMANUEL. 1952. The Save-the-Redwoods League. [Save-the-Redwoods League, San Francisco] Jan. 29, 1952. 10 p. Processed.

Also condensed, with title "Recommendations for Accelerating the Acquisition of Redwood Lands for State Parks" Oct. 23, 1952. 2 p. Processed. The original publication covers also a history of the League, its membership for 1952, operations and accomplishments, and suggestions for future acquisition and public education.

1858 GRANT, JOSEPH D. 1929. Redwood — Ever-living Memorials.

Amer. Forests. 35:390-395. July 1929. Illus.

The author speaks of the appropriateness of trees as memorials, and mentions the following groves: Bolling, Lane, Hickey, Gould, Humboldt County Pioneers, Felton, Whittemore, Stephens, Richardson, and Graves.

1859 GRANT, JOSEPH D. 1924. Saving America's Primeval Redwood Forests. *Overland Monthly.* 82 (ser. 2):435-436, 480. Oct. 1924. Illus.

Work of the Save-the-Redwoods League to preserve and purchase forests and groves; gifts of the period are listed.

1860 GRANT, JOSEPH D. 1922. Saving California's Redwoods. Save-the-Redwoods League, Berkeley, Calif. 16 p. Illus.

Excerpts from three addresses . . . 1. After the Dedication of Bolling Memorial Grove. At Eureka, Calif. 2. The Redwoods and the State Park Movement in California. At Palisades Interstate Park, New York. 3. Saving California's Redwoods. At Stanford Univ., Calif.

1861 GRANT, MADISON. 1933. "Preservation" or "Restoration": Saving the Redwoods as an Example. *Natural History.* 33:337-338. May-June 1933.

The preservation work of the Save-the-Redwoods League.

1862 GRANT, MADISON. 1921. Preserve an America Worth Fighting For. [Save-the-Redwoods League, Berkeley, Calif. 7 p.] Illus.

Address delivered at the dedication of the Bolling Memorial Grove, honoring the memory of Colonel Raynal C. Bolling, first American officer of high rank killed in World War I.

1863 GRANT, MADISON. 1919. Saving the Redwoods. *Zoological Soc. Bul.* [New York]. 22(5):91-118. Sept. 1919. Illus.

Also in *Natl. Geog. Mag.*, 37:519-536, June 1920; *Literary Digest*, 64:100-105, March 27, 1920, with title "Ancient Redwoods Butchered for Grape-stakes" (reviewed).

Gives brief geological history of the Sequoia. The main purpose of the article is "an account of the movement during 1919 to preserve the Redwoods of California." Describes the trees and the forests, the distribution, and destruction of forests. States the history and objectives of the "Save-the-Redwoods League."

1864 GRAVES, HENRY S. 1926. Our Most Urgent Public Park. *Amer. Forests.* 32:75-78. Feb. 1926. Illus., map.

Description of the redwoods along the Redwood Highway, and stressing the need to preserve the Bull Creek-Dyerville Flat area.

1865 GRAVES, HENRY S. 1925. A Trip in the Redwoods. *Yale Forest School News.* 13:61-62. Oct. 1925.

Primarily concerns the preservation of the better groves.

1866 GROVE, A. 1931. Sequoia. *Gardeners' Chronicle* [London]. 90: 11-12. July 4, 1931.

The grandeur of the Coast and Sierra redwoods, and their preservation.

1867 HAMMATT, RICHARD F. 1921. California's Redwoods and Her Highways. In *Intercollegiate Forestry Club Annual.* 1(1):19-20. April 1921. Illus.

Primarily a plea for retaining a strip of virgin Coast Redwood along the highways within Mendocino, Humboldt, and Del Norte counties.

1868 JONES, MRS. STEPHEN A. 1912. The Sequoia Sempervirens or Coast Redwood of California. In *Fourth Bien. Rpt. of the State Board of Forestry.* State Printing Office, Sacramento. p. 136-140.

Brief description of the tree, and the history of the Santa Cruz redwoods. The article relates the founding of the Sempervirens Club in May, 1900, and the movement which resulted in the purchase of the Big Basin area.

1869 LUMMIS, CHAS. F. 1901. In the Lion's Den. *The Land of Sunshine.* 14:334. Apr. 1901.

The signing by Governor Gage of the bill by which California will purchase the redwood forest of the Big Basin.

1870 MERRIAM, JOHN C. 1941. The Highest Use of the Redwoods. Save-the-Redwoods League [Berkeley, Calif.]. 47 p. Illus.

A collection of messages by the author at annual meetings of the League, 1922-1941.

1871 MERRIAM, JOHN C. 1934. The Tasks Ahead of the Save-the-Redwoods League. In *Saving the Redwoods,* Save-the-Redwoods League report for 1934, Berkeley, Calif. 8 p. Illus., map.

A message to members from the League's president.

1872 MUIR, JOHN. 1905? Save the Redwoods. *Sierra Club Bul.* 11:1-4. Jan. 1920. Illus.

This article was found in Muir's papers after his death; it is concerned chiefly with the Sierra redwood but includes also a plea for the preservation of a Coast redwood park. (Also, on p. 87, a brief editorial on Muir by W. F. Bade.)

1873 MULFORD, WALTER. 1922. Forestry Notes. *Sierra Club Bul.* 11(3):327-329.

Two brief articles: "Forest Preservation in the Redwoods," primarily on Bolling Memorial Redwood Grove (see also p. 302 for editorial); "Forestry in the Redwoods," a summary of progress toward sustained yield by various lumber companies.

1874 MULFORD, WALTER. 1923. Forestry Notes. *Sierra Club Bul.* 11(4):449-452.

Two brief articles. One on the "Humboldt State Redwood Park," listing gifts and appropriations, land secured and including name of owner, acres, price, and timber in bd. ft. The other entitled "Notable Development of Forestry in the Coast Redwood Region."

1875 OSBORN, HENRY FAIRFIELD. 1919. Sequoia — The Auld Lang Syne of Trees. (Reprinted from) *Natural History.* 19:598-613. Illus.

The author gives a clear and full account of the redwood preservation situation in the redwood forests, and the formation of the Save-the-Redwoods League, its officers, aims, and program for preservation. Particular emphasis on saving redwood forests in Humboldt County, recommended as the first purchase for park purposes.

1876 PARDEE, GEORGE C. 1914. History of California. Century History Co., New York.

Conservation vs. preservation, vol. 5, p. 376-381.

1877 PEATTIE, DONALD C. 1954. Avenue of the Giants. *Holiday Mag.* 15:584. March 1954. Illus.

Describes the forests on the Redwood Highway. Illustrated.

1878 ROOSEVELT, THEODORE. 1904. Address at Leland Stanford University. . . . In *Addresses and Messages* . . ., G. P. Putnam's Sons, New York and London. p. 188-198.

Address at Stanford University on May 12, 1903, on the beauty of the redwoods, and urging their preservation. (Note: This speech is also included in other editions of addresses by the author.)

1879 RUHL, ARTHUR. 1909. Last of the Big Trees. In *Conservation of Natural Resources* [23d Bien. Rpt. of the Supt. of Public Instruction], Sacramento, Calif. p. 31-36. Illus.

Excerpts from an article in *Collier's Weekly* on the preservation of Sierra and Coast redwood.

1880 SARGENT, CHARLES S. 1900. The Coast Redwoods. *The Forester* [*Amer. Forests*]. 6:196. Aug. 1900.

All redwood lands have passed from the control of the government; plea for a redwood reservation.

1881 SARGENT, CHARLES S. 1900. [Letter from Prof. Sargent] *Revue des Eaux et Forêt.* 39:604-605. Sept. 1900. [In French.]

Letter briefly describes redwood, and states the need for public purchase, since none is owned by the government.

1882 SAVE-THE-REDWOODS LEAGUE. 1920+. [Annual Reports and Miscellaneous Publications] Save-the-Redwoods League [Berkeley and San Francisco, Calif.]. v.p. Illus., maps.

Annual reports summarize the main activities of the League for the years included; special programs, purchases, or dedications are noted:

1920, 23 p., includes the purchase of Vance Bottom, 297 acres; Smith and Mains, 40 acres; Dunn and Dimmick, 225 acres.

1921, 8 p., general report.

1922, 19 p., includes excerpts from three addresses by J. D. Grant.

1923, 12 p., includes two tracts saved for purchase: Humboldt Pioneer Memorial Grove and the McCormick tract of 310 acres in San Mateo County; 14 photographic studies by H. C. Tibbitts. Also, a special pamphlet, 16 p., "Dedication of the Humboldt Pioneer Memorial Grove." (Prairie Creek Redwoods State Park.)

1924-1925, 38 p., devoted primarily to Bull Creek and Dyerville Flats, and containing "The Need for Central State Park Commission in California," by Duncan McDuffie. Also, a special pamphlet, 2 p., "Dedication of the Franklin K. Lane Memorial Redwood Grove" in Humboldt County.

1925-1926, 25 p., devoted primarily to Bull Creek and Dyerville Flat. Also, a special pamphlet, 4 p., "Dedication of the Henry S. Graves Redwood Grove" in Del Norte County.

1927-1928, 43 p., on the State Park Commission, appointed in 1927, and the State Park Survey; lists State Parks and Monuments as of July 29, 1927.

1928-1929, 8 p., on the completion of the Del Norte Coast Project, 2500 acres at a cost of more than $400,000. Also, a special pamphlet, 12 p., "Dedication of the Harris Whittemore Memorial Grove" in Humboldt County.

1930-1931, 12 p., on the movement to purchase 10,000 acres of the Bull Creek-Dyerville Flat area.

1932, 8 p., on the preservation of the Prairie Creek Redwoods in Humboldt County.

1932-1933, 12 p., general report.

1934, 8 p., "The Tasks Ahead of the Save-the-Redwoods League" by John C. Merriam.

1936, 4 p., "The Children's Forest."

1937, 8 p., general report.

1939, 8 p., on the Avenue of the Giants. Also, a special pamphlet, 8 p., "Mill Creek Redwoods Preserved."

1940, 1941, 1942, 1943 are general reports.

1944, 16 p., on the National Tribute Grove in Del Norte County.

1945, 1946 are general reports.

1947, 1948, 16 p., primarily on the Madison Grant Forest and Elk Refuge in Prairie Creek Redwoods State Park, in Humboldt County.

1949, 1950, general report.

1883 SHAW, RALPH H. 1954. History of the Acquisition of the Butano [State Forest]. *Natl. Shade Tree Conf. Proc.* 30:293-296.

A summary of the attempt to acquire the area in San Mateo known as Butano Forest.

1884 SHAW, VAL. 1902. The Rape of the Redwood. *Overland Monthly.* 39 (ser.2): 738-742. March 1902. Illus.

Primarily concerned with timber depletion and the need for conservation and forestry. Brief description of logging in Mendocino County.

1885 SMITH, ANTHONY WAYNE. 1946. [Statement for the C. I. O.] *Amer. Forest Cong. Proc.* p. 96. Oct. 1946.

Statement read at the meeting endorsing for the Congress of Industrial Organization the Helen Gahagan Douglas bill to purchase the redwood lands of Northwest Calif. for the creation of a national forest as a memorial to Franklin D. Roosevelt.

1886 SMITH, ANTHONY WAYNE. 1953. [Paper presented and reply by Emanuel Fritz.] In *Amer. Forest Cong. Proc.* 4:235-237, 260-261, 317.

Paper read by Mr. Smith (p. 237) charges that among other things, discussion on a new national forest in the redwood belt was closed in the correspondence columns of *Amer. Forests.* Mr. Fritz (p. 260) answered that the interchange was refused space because it was not factual. Mr. Smith also charged that selective cutting claim is a pretense (p. 317).

1887 SMITH, KENNETH. 1952. State Park Programs and the Redwood Industry. *J. Forestry.* 50:659-662. Sept. 1952.

Article on the slow-down of the program of state redwood park acquisition and extension, and criticism of the apparent lack of plan. The author "recommends that the park proponents reveal their plans so that owners and operators will know which stands are desired for parks; he suggests further that the matching-money principle can no longer be depended upon for large gifts and that the state legislature should make one appropriation and complete the program before prices and inflation make it inordinately expensive or impossible."

1888 SMITH, RALPH SIDNEY. n.d. The Redwood Reserve: A Plan to Save a Portion of the Coast Redwood Forest. *San Mateo County Times and Gazette,* Redwood City, Calif. 8 p.

An early appeal to preserve the redwoods, particularly those of Santa Cruz County, mentioning groves near Ben Lomond and Boulder Creek.

1889 STROTHER, FRENCH. 1909. Saving the Big Trees. *World's Work.* 18:11697-11706. June 1909. Illus.

The need for purchase and protection of both Coast and Sierra redwood groves.

1890 WALLEN, ARNOLD F. 1947. Jackson Forest. *Amer. Forests.* 53: 122-123, 142. March 1947. Illus.

An interesting account of the history of the Caspar Lumber Co. property and its acquisition by the State in 1947 for the Jackson State Forest in Mendocino County.

1891 WESTWOOD, RICHARD W. 1925. Nature's Cathedral. *Nature Mag.* 5:47-50. Jan. 1925. Illus.

The efforts of the Save-the-Redwoods League to preserve redwoods for recreation through purchase and for commercial purposes by furthering reforestation.

STATE AND NATIONAL PARKS AND FORESTS

1892 ANON. 1907. California Redwood Park. *Calif. Blue Book* [State Printing Office, Sacramento]. p. 72-76. Illus.

Brief note on Big Basin Redwood State Park.

1893 ANON. 1931. A Cathedral of Trees. *Amer. Forests.* 37:664. Nov. 1931.

Editorial on the dedication of the Bull Creek-Dyerville Redwood Forest.

1894 ANON. 1931. Conservation: Purchase of Bull Creek and Dyerville Flat Redwood Groves. *Natural Hist.* 31:672-673. Nov.-Dec. 1931.

Also includes the dedication of the Founders' Tree, with text of the speech by Major Burnham.

1895 ANON. 1925. Graves Grove Dedicated. *Timberman.* 26:108. Sept. 1925.

Account of the 157-acre tract 10 miles south of Crescent City in Del Norte Coast State Park which was donated by George Frederick Schwarz in honor of Henry S. Graves.

1896 ANON. 1938. John Muir and the National Monument in His Honor. *Sci. Monthly.* 46:490-494. May 1938. Illus.

Article celebrating the 100th anniversary of John Muir, giving a brief account of his life and accomplishments towards conservation of the natural wonders of California. The article also discusses redwoods and their peculiarities as found in Muir Woods, as well as associated plant life and animal inhabitants.

1897 ANON. 1922. More Enduring than Bronze. *Outing.* 79:209. Feb. 1922. Illus.

Subtitled: A grove of California redwoods to keep green the memory of Raynall Bolling.

1898 ANON. 1931. More Sequoias Saved for Parks. *J. Forestry.* 29:964. Oct. 1931.

Brief note mentioning the acquisition of the Bull Creek and Dyerville Flat groves for the Humboldt Redwoods State Park.

1899 ANON. 1931. A New Redwood Park. *Amer. Forests.* 37:539. Sept. 1931. Illus.

An account of the acquisition of a tract of 10,000 acres known as the Bull Creek-Dyerville Flats area, to become part of Humboldt Redwoods State Park.

1900 ANON. 1901. Pacific Coast News Notes. *Amer. Lumberman.* 1345: 39. March 2, 1901.

Gift to State of forest of 300 acres; purchase of redwood timber land by G. R. Georgeson.

1901 ANON. 1908. Redwood Canyon Deeded to United States. *Forestry and Irrigation* [*Amer. Forests*]. 14:97-98. Feb. 1908. Illus.

Article telling the size and value of Muir Woods, the gift of Mr. William Kent.

1902 ANON. 1921. Redwood Grove Saved. *Amer. Forestry.* 27:409. June 1921.

Purchase of the Dunn and Dimmick holding by Humboldt County in cooperation with the Save-the-Redwoods League.

1903 ANON. 1949. Redwood Museum at Dyerville [Humboldt County]. *Redwood Region Logging Conf. Bul.*, Brizard-Matthews Machinery Co., Eureka, Calif. p 10.

1904 ANON. 1947. State Purchases Forest Land. Soc. of Amer. Foresters, *Forestry News.* 2:15. April 1947.

A news release giving details of the purchase of the Jackson State Forest in Mendocino County, from the Caspar Lumber Co.

1905 AYERS, ROBERT W., and WALLACE HUTCHINSON. 1927. The National Forests of California. U.S. Dept. Agr., Wash., D.C. Misc. Circ. 94. 34 p. Illus.

Mentions also Muir Woods and State Parks.

1906 CALIF. DEPT. OF NATURAL RESOURCES. DIV. OF PARKS. 1938. Big Basin Redwoods State Park. Sacramento, Calif. 12 p. Map.

Folded map, with information on back of map.

1907 CALIF. DEPT. OF NATURAL RESOURCES. DIV. OF PARKS. 1938. Northern Redwoods State Parks: Richardson Grove State Park. Sacramento, Calif. 12 p. Map.

Folded map, with information on back of map.

1908 CALIF. DEPT. OF NATURAL RESOURCES. DIV. OF PARKS. 1938. Pfeiffer Redwoods State Park [Big Sur], Sacramento, Calif. 12 p. Map.

Folded map, with information on back of map.

1909 CALIF. STATE BOARD OF FORESTRY. 1907. California Redwood Park. Calif. State Bd. of Forestry, Sacramento. Circ. No. 1. 8 p. Illus.

Brief description of Big Basin Redwood State Park, with five full-page illustrations.

1910 CALIF. STATE BOARD OF FORESTRY. 1906. California Redwood Park, by G. B. Lull. In *First Bien. Rpt. of the State Forester, 1906,* p. 34-39; in *Second Bien. Rpt. of the State Forester, 1908,* p. 20-26. State Printing Office, Sacramento. Maps.

Concerns administration of the Big Basin Redwood Park primarily, including protection, improvements, acquisition, expenses, visitors. Maps included in Second Bien. Rpt.

1911 CHASE, PEARL. 1931. A Gift from the Gods—and the Garden Club of America. *Calif. Arts and Architecture.* 39:37,56. Jan. 1931.

Describes the purchase of the Garden Club of America Grove in Humboldt Redwoods State Park.

1912 CLARKE, F. L. 1901. The Big Basin. *Sierra Club Bul.* 3:218-223. Feb. 1901. Illus.

Primarily a description of the Park, including associated species. Also names principal land holders of the area; mentions a mill built by Waddell about 1860.

1913 DRURY, AUBREY. 1944. Toward a Coast Redwoods Master Plan. *Natl. Parks Mag.* No. 79, p. 17-20. Oct.-Dec. 1944. Illus.

Describes the need for and the plan being made by H. S. Graves and F. L. Olmsted, under the auspices of the Save-the-Redwoods League and with the approval of the State Park Commission.

1914 DRURY, NEWTON B. 1940. California's Investment in State Parks. U.S. Natl. Park Serv. *Yearbook, Park and Recreation Progress.* p. 27-32. Illus.

Discussion of the development of the park system according to a plan; includes many references to the several redwood parks.

1915 DRURY, NEWTON B. 1940. Preserving the Native Landscape in California. *Natl. Parks Bul.* [*Natl. Parks Mag.*] No. 68, p. 11-15. July 1940.

The philosophy of state park reservations, including redwood parks.

1916 DUDLEY, WILLIAM R. 1901. The Big Basin Redwood Park. *Forester* [*Amer. Forests.*] 7:157-164. July 1901. Illus.

Good general article.

1917 DUDLEY, WILLIAM R. 1901. Forestry Notes: The Redwood Reservation Act. *Sierra Club Bul.* 3: 337-339. June 1901.

Brief outline and history of the bill which provided for the purchase of Big Basin Redwood Park. A copy of the amended act is included.

See also *Sierra Club Bul.,* 3:266, Feb. 1901. Armstrong Grove presented to State.

1918 GRANT, JOSEPH D. 1932. Prairie Creek Redwoods Saved. *Amer. Forests.* 38:284-285. May 1932. Illus.

Description of the area, including the trees and flowers of the region.

1919 HART, JEROME A. 1931. In Our Second Century. The Pioneer Press, San Francisco. 454 p.

Describes the selection of the Meeker Tract (now the Bohemian Grove) for the "Jinks" of the Bohemian Club; their first performance was in 1882, the area purchased in 1899.

1920 HASTINGS, CRISTEL. 1935. The Forest of the Forty-Niner. *Amer. Forests.* 41:640-641, 661. Nov. 1935. Illus.

Account of the acquisition of the 120-acre Welch Grove near Felton in Santa Cruz County for $75,000. Many noted trees, including the General Fremont Tree. The forest was originally acquired in 1867 by Joseph Warren Welch to save it from destruction.

1921 HERSCHLER, J. BARTON. 1939. Muir Woods National Monument. Pub. by the author, Estes Park, Colorado. 40 p. Illus., map, biblio.

The author was formerly custodian of Muir Woods. Largely an account of the life story of redwood in general, with specific references to redwood in Muir Woods.

1922 HUNT, PAULINE GRACE. 1924. "In and Out of the Chimney Tree." *Amer. Forests.* 30:26. Jan. 1924. Illus.

At Big Basin Redwood Park; tells of a children's game around the tree.

1923 JORDAN, DAVID STARR. 1891. The Days of a Man. World Book Co., Yonkers-on-Hudson, New York, 1922. 2 vols.

In vol. 1, p. 393, he briefly describes Felton Grove in the Santa Cruz Mountains, and on p. 518, his role in the acquisition of Big Basin Redwood State Park.

1924 KENT, WILLIAM. 1908. Redwoods. *Sierra Club Bul.* 6:286-290. June 1908. Illus.

Also includes the correspondence between Kent and Theodore Roosevelt regarding Kent's gift of Muir Woods to the government.

1925 KNAPPEN, THEODORE M. 1924. Monument to the Memory of the Argonauts. *Amer. Forests.* 30:286-287, 306. May 1924. Illus.

Memorial to the Pioneers of Humboldt County, in the Humboldt Redwoods State Park, given by Zipporah Russ in memory of her husband, Joseph Russ.

1926 KNIGHT, EMERSON. 1931. The Del Norte Coast State Park. *Sierra Club Bul.* 16:29-36. Feb. 1931. Illus.

A description of the park and a sketch of its development.

1927 LINDEN, GRACE. 1932. The Prairie Creek Redwoods. [Reprinted from] *Natural History.* 32:148-157. March-April 1932. Illus.

A well illustrated description of the park, including associated species and flowers of the region, and as a sanctuary for the Roosevelt elk. Mentions the role of the Save-the-Redwoods League in its acquisition.

1928 McDUFFIE, DUNCAN. 1925. The Need for a Central State Park Commission in California. In *Saving the Redwoods,* Save-the-Redwoods League report for 1924-1925, Berkeley, Calif. p. 31-32.

1929 NATIONAL PARKS ASSOC. 1926. Greatest Redwoods Reservation Now in Sight. *Natl. Parks Bul.* 47:3-5. Jan. 1926. Illus., map.

Description of the Bull Creek Flat area in Humboldt County, with general notes on redwood. Brief section on the Save-the-Redwoods League and its work toward purchases.

1930 NEW YORK TRIBUNE. 1904. The Life of a Big Tree. *Amer. Architect & Building News.* 83:94-95. March 19, 1904.

News item. Brief mention of an appropriation (1901) to purchase Coast redwood. Article primarily on Sierra redwood, and the measurements taken of them by Prof. W. R. Dudley of Stanford University.

1931 OLMSTED, FREDERICK LAW. 1929. Report of the State Park Survey of California. Calif. State Park Commission. State Printing Office, Sacramento. 72 p. Illus., map.

An important survey of the scenic and recreational resources of California aimed at conserving them, and including a discussion of specific state park projects. Redwood areas are discussed on p. 39, 44, 60-61.

1932 PARSONS, E. T. 1908. William Kent's Gift. *Sierra Club Bul.* 6:285. June 1908. Illus.

Brief statement of his gift of Muir Woods to the government.

1933 ROLLER, ANNE. 1930. Saving the Redwoods. *The Survey.* 64:305-307. July 1, 1930. Illus.

Tells of the purchase of the Del Norte Coast State Park, and of what the Redwood Empire Assoc. is doing to attract tourists to the redwood region.

1934 ROORBACH, ELOISE. 1907. The Big Basin. *Overland Monthly.* 50 (ser.2):301-308. Oct. 1907. Illus.

Popular article describing the forest character and acreage.

1935 SHINN, CHARLES H. 1924. The Giver of Muir Woods. *Amer. Forests.* 30:147-148. Illus.

Brief biography of William Kent.

1936 TAYLOR, ARTHUR A. 1912. California Redwood Park [Big Basin]. W. Richardson, Sacramento. 130 p. Illus.

A compilation of poems on redwood and brief statements on the tree and the Park. Also includes an essay by Dr. Isabel McCracken, "Flora of California Redwood Park," p. 65-81; several brief and poetic notes by Virginia Garland on points of interest in the Park, p. 82-114.

1937 TAYLOR, ARTHUR A. 1919. California's Redwood Park. *Amer. Forestry* [*Amer. Forests*]. 25:1446-1450. Nov. 1919. Illus.

Description of Big Basin Redwood State Park.

1938 TAYLOR, FRANK J. 1948. The Redwood's Best Friend. *Sat. Evening Post.* 220:12. Sept. 18, 1948. Illus.

Describes the hobby of Clarence F. (Sandy) Pratt, giving away of redwood seedlings. Reports that redwood will grow in any soil and climate, and that it once occupied all of North America.

1939 WALTER, CARRIE STEVENS. 1902. The Preservation of Big Basin. *Overland Monthly.* 40 (ser.2): 354-361. Oct. 1902. Illus.

History of the movement leading to the acquisition of the Big Basin Redwood State Park in Santa Cruz County. Illustrations include logging scenes.

1940 WHITE, LAURA LYON. 1891. A Day in the Redwoods of Lagoon Creek. *Overland Monthly.* 18 (ser. 2): 257-260. Sept. 1891.

Account of a hike about Marin County.

REDWOOD AS AN ORNAMENTAL

1941 ANDERSON, W. WARREN. 1949. You Too Can Grow a Redwood Tree! Rare Plant Club, 208 McAllister Ave., Kentfield, Calif. 15 p. Illus.

Illustrated bulletin containing information on redwoods and other members of the family Taxodiaceae for ornamental planting. Includes Metasequoia.

1942 BOWERS, H. DANA. 1935. Native Plants and Their Use in Highway Beautification. *Western Shade Tree Conf. Proc.* 2:25-32. March 1935.

The author recommends Coast redwood for roadside trees in the Northern Interior Valley of California.

1943 CAMPBELL, DOUGLAS H. 1917. A Californian Arboretum. *Scientific Monthly.* 4:289-300. April, 1917. Illus.

The article describes the arboretum planted by Gov. Stanford, which is now the Stanford Univ. campus at Palo Alto. Mentions two redwoods planted in 1880 which were 110 feet in height and eight feet eight inches d.b.h. at the time of the article.

1944 ELLIOTT, CLARENCE. 1951. Dwarfing a Giant. *Illus. London News* [London]. 218:136. Jan. 27, 1951.

The author describes his method of

growing Coast redwood as a dwarf in the Japanese style; with photographs.

1945 FERNOW, BERNHARD EDUARD. 1910. The Care of Trees. Henry Holt & Co., New York. 392 p. Index.

Subtitled: In Lawn, street and park with a list of trees and shrubs for decorative use. Brief mention only of Coast redwood, stressing its need for a humid atmosphere.

1946 METCALF, WOODBRIDGE. 1940. Some California Trees of Outstanding Interest. Seventh Western Shade Tree Conference, *Proc.* p. 31-49. Illus.

Mentions outstanding Coast and Sierra redwoods planted outside their native habitat in California, p. 32-33.

1947 MORRISON, BEN Y. 1913. Street and Highway Planting. Calif. State Board of Forestry, State Printing Office, Sacramento. Bul. 4. 119 p. Illus.

Brief reference to Coast redwood, recommending it for roads only on account of size, p. 64; the essential features are presented in tabular form on p. 74.

1948 PRATT, MERRITT B. 1921. Shade and Ornamental Trees of California. Calif. State Board of Forestry, Sacramento. 132 p. Illus., index.

Brief description of redwood, p. 28.

1949 SARGENT, CHARLES S. 1897. Notes on Cultivated Conifers. *Garden and Forest.* 10:450-451. Nov. 17, 1897.

"The redwood, the tallest of American trees, can only flourish where winters are mild and moisture abundant, and I have never seen a specimen on the Atlantic seaboard north of Charleston, S. C."

1950 VAN RENSSELAER, MAUNSELL. 1948. Trees of Santa Barbara. Santa Barbara Botanic Garden [Santa Barbara, Calif.]. 213 p. Illus., index.

This is the revised and enlarged edition. Contains a brief description of Coast and Sierra redwoods planted in Santa Barbara, and the note that the varieties *S. s. glauca* and *S. s. pendula* are occasionally grown there.

1951 VORTRIEDE, WILLIAM. 1916. State Capitol Park. In *Second Rpt. of the Supt. Capitol Bldg. and Grounds.* State Printing Office, Sacramento. p. 29-30.

Mention is made of the Coast and Sierra redwoods planted on the grounds of the State Capitol.

REDWOOD AS AN EXOTIC

1952 ANON. 1912. The Californian Redwood. *Garden* [London]. 76:172. April 6, 1912. Illus.

General information on size and age, and growth in the British Isles.

1953 ANON. 1860. Correspondence. *Gardeners' Chronicle* [London]. 20:362, 458, 578. April 21/May 19/June 23, 1860.

Three letters to the editor containing statements showing that the winter of 1859-1860 caused considerable damage to specimens of Coast redwood in the British Isles.

1954 ANON. 1862. Flower Garden and Shrubberies. *The Gardener's Chronicle* [London]. 22:624. July 5, 1862.

Taxodium sempervirens for hedges.

1955 ANON. 1929. Frost Retards Growth of Planted Redwood in Oregon and Washington. *Forest Worker.* 5:14. March 1929.

Brief article citing extensive damage on 17 plots established in western Oregon and Washington at elevations from 750-3000 feet.

1956 ANON. 1927. Growing Redwood

on Grays Harbor. *Timberman.* 28: 112. Apr. 1927.

Experiments in planting redwood trees and seeds on logged-over land of the Humptulips district prove successful.

1957 ANON. 1849. Home Correspondence; Climate of Northumberland. *The Gardener's Chronicle* [London]. 9:22. Jan. 13, 1849.

Attempts to raise Taxodium [*Sequoia*] *Sempervirens.*

1958 ANON. 1931. New Zealand Buys Redwood Seed. *J. Forestry.* 29: 965. Oct. 1931.

Brief note stating that New Zealand purchased 1,200 pounds for afforestation purposes.

1959 ANON. 1927. Plant Redwoods in Texas. *Timberman.* 28:188. Apr. 1927.

Redwood planted on cutover lands.

1960 ANON. 1849. Taxodium Sempervirens. *The Gardener's Chronicle* [London]. 9:280. May 5, 1849. (Taxodium, the original generic name.)

Soil and climate most suitable.

1961 ALVIELLA, FELIX GOBLET, D'. 1920. The Forest Flora in the Region of the Italian Lakes. *Bul. Soc. Centrale Forest.* [Belgique] 23:573-589. Illus. [Reviewed by W. C. Lowdermilk in *Bot. Abstracts* 10:243, Feb. 1922, entry 1611.]

The development of numerous introduced species is discussed, among others, Coast and Sierra redwood. "Excellent development is reported for the species which were planted on the alluvial soils near the lake shores." Original article in French.

1962 BADOUX, ERIC. 1935. The Sequoias of California. *J. Forestier Suisse.* 86:138-142. June 1935. [In French.]

General facts about Coast and Sierra redwoods, including an outline of fossils. Mention is made of plantings in Central Europe, particularly for Sierra redwood.

1963 BEAN, W. J. 1908. The Royal Botanic Gardens, Kew: Historical and Descriptive. Cassell & Co., Ltd., London, Eng.

Sequoia sempervirens, p. 195.

1964 BERRY, GEORGE. 1877. The Redwood in England. *The Garden* [London]. 12:437. Nov. 10, 1877.

The dimensions of several trees are cited in support of the author's contention that redwood makes excellent growth in England.

1965 BROWN, NELSON C. 1921. Spain and Her Scanty Forests. *Amer. Forestry.* 27:135-139. March 1921. Illus.

An illustration with a caption stating that redwoods "grow splendidly under the climatic and soil conditions afforded in Spain," p. 139.

1966 BRYAN, L. W. 1929. The Redwood in Hawaii. *Hawaiian Forester & Agr.* 26:135. July-Sept. 1929.

Describes the attempts to introduce the redwoods; Sierra redwood did so poorly it has been discontinued. Coast redwood did well, and the results at the time of the article (plantings were made in 1926) indicate considerable possibilities. (See also No. 2001.)

1967 CANNON, DAVID. 1885. Economical Pine Planting. In *Forestry and Forest Products.* David Douglas, Edinburgh. p. 145-222.

Author states that redwood is "of too immoderate growth to make an independent forest tree in extreme climates" but if protected would make a fine forest tree; most of those planted in Central France were destroyed by the frost of 1879, but one specimen at Tours withstood the very low temperature, p. 216-217.

1968 CHITTENDEN, F. J., ed. 1932. Conifers in Cultivation. Royal

Horticultural Soc. of London. 630 p. Good index.

Report of the Conifer Conference. Contains many references to the growth of redwood in the British Isles and territorial possessions, including varieties of redwood.

1969 DAVY, JOSEPH BURTT. 1926. Hand Book of Conifers Grown in the Arboretum, Bagley Wood, Oxford. The Holywell Press, Oxford, Eng.

Sequoia sempervirens, p. 36-37.

1970 DESPORTES, BAPTISTE. 1850. Taxodium Sempervirens, Also Called Sequoia Sempervirens and S. Gigantea. *Revue Horticole* [Paris]. 4(ser.3):362-364. [In French.]

General description of the tree and the wood, with the statement that Americans called it redwood or "Bastard Cedar," and that it comes from the Santa Cruz Mountains. In 1845 André Leroy, of Angers, received three seedlings and planted them without any more care than other trees; one was put in heath land and another in "pure" land. The former is now seven meters high and the latter slightly less (in 1850). The author felt that if seeds were abundant and easy to remove, the redwood would be valuable for reforesting in France.

1971 DUNCAN, JAMES. 1849. Taxodium Sempervirens. *Gardeners' Chronicle* [London]. 9:166. March 17, 1849.

A letter to the editor telling of a plant nine inches high which was transplanted in July 1847, to an exposed position where it survived two winters and was apparently hardy.

1972 ELWES, HENRY J., and AUGUSTINE HENRY. 1908. The Trees of Great Britain and Ireland. vol. 3. Privately printed, Edinburgh. p. 451-711. Illus.

A comprehensive treatment of Coast redwood, p. 688-699, including the introduction of redwood to Great Britain, its cultivation and the remarkable trees there, and the dimensions of many trees in England, Scotland, and Ireland. The general botanical description is largely based on the work of others, especially Sargent and R. T. Fisher.

1973 ELWES, HENRY J., and H. A. PRITCHARD. 1912. Experiments on Trees at Colesborne [England]. *Q. J. Forestry* [London]. 6:83-111. April 1912.

Effect of frosts and low temperatures on Coast redwood as compared with Sierra redwood, p. 101.

1974 GILL, R. 1888. Sequoia Sempervirens. *The Garden* [London]. 33:349. April 14, 1888.

A fine specimen in the grounds of Penjerrick, Cornwall.

1975 HILEY, W. E., and R. LEHTPERE. 1954. Redwood at Dartington. [Reprinted from] *Q. J. Forestry* [London]. 3 p. July 1954. Illus., table.

Describes a 20-year plantation of Coast redwood in Devon, England. Table gives growth data.

1976 HUTCHISON, ROBERT. 1877. On the Taxodium Sempervirens (or Red Wood) for Timber Purposes. In *Highland and Agr. Soc. of Scotland, Trans.*, Edinburgh. 4th series, 9:209-222. Table.

Article refers to Coast Redwood in the British Isles. Compares Coast redwood with Sierra redwood. Some information on scientific names. The bulk of the article describes the leaves, branches, cones; the soil and climate of Britain for both trees, and the general conditions of their habitat. The table gives the locality, height, circumference, soil etc., and under Remarks, such information as date planted, whether plant is healthy, altitude, etc.; for all Coast redwood in Britain.

1977 ILLICK, JOSEPH S. 1928. Pennsylvania Trees. Penn. Dept. of Forests and Waters, [Penna.]. Bul.

11 (Reprint of 5th ed. of 1925). 237 p. Illus., index.

Picture of "The largest Sequoia in Eastern North America" in Delaware Co., Penna., which is a Sierra redwood; text uses the terms big trees, redwoods and Sequoias synonymously.

1978 IMPERIAL FORESTRY INSTITUTE. 1925. Redwood in New Zealand. *J. Forestry*. 23:195-196. Feb. 1925. Table.

Table gives yield figures based on one small plantation established in 1888; comparison is made with Site 1 yields in California.

1979 KNUCHEL, H. 1925. Impressions of Forest Conditions in Portugal. *Bot. Abs.* 12(8):923. Entry 5558. Oct. 1925.

Sequoia sempervirens has been introduced there.

1980 LESLIE, CHAS. STEPHEN. 1876. Taxodium Sempervirens. *The Gardener's Chronicle* [London]. 6:560. Oct. 28, 1876.

Report of a redwood cut down in England.

1981 LOUDON, J. C. 1854. The Trees and Shrubs of Britain, vol. 4. Henry G. Bohn, London. p. 2032-2694. Illus., index.

A brief botanical description and drawing of the leaves and cone of *Taxodium sempervirens Lamb.* is given, p. 2487. The author adds: "This species was discovered by Mr. Menzies, on the north-west Coast of America, in 1796; and immense trees of it were seen by Dr. Coulter in 1836; but it has not yet been introduced. It will probably prove hardy; and, in that case its introduction would be exceedingly desirable."

1982 M'CALLUM. 1921. Sequoia Sempervirens at Canford. *Q. J. Forestry* [London]. 15:292. Oct. 1921.

Coppice shoots, though killed back by frost, are able to make a yearly growth of some five-six feet the first two seasons. About 200 shoots are produced by one "stool."

1983 MacKENZIE, ALEX. M. 1931. Sequoia Sempervirens in Britain. *Scottish Forestry J.* [Edinburgh]. 45:155-157. Oct. 1931. Illus.

Article gives data concerning the height, basal area, and volume of trees on a tract planted in 1856 at Leighton Park, Montgomeryshire, the measurements being taken in 1920, 1926, 1931 on a .212-acre sample plot.

1984 MASON, DAVID T. 1924. Redwood for Reforestation in the Douglas Fir Region. *Timberman.* 25:130, 132. Nov. 1924. Illus.

Discussion of the factors which indicate that redwood is worthy of consideration for planting in the Douglas fir region, west of the Cascades in Oregon, Washington and British Columbia.

1985 MAXWELL, E. 1931? Afforestation in Southern Lands [New Zealand]. Whitcombe & Tombs, Ltd., Auckland and London. 315 p. Illus., index.

Subtitled: Dealing specially with location as to market, system and methods of planting, sylvicultural treatment and species most suitable for Southern lands. The author believes redwood to be one of the finest of all trees, and discusses most aspects of it for possible commercial cultivation in New Zealand.

1986 MAXWELL, SIR HERBERT. 1915. Trees, a Woodland Notebook Containing Observations on Certain British and Exotic Trees. James Maclehose & Sons, Glasgow.

Wellingtonia and redwood trees, p. 221-228.

1987 NORTH, MARIANNE. 1883. Royal Gardens, Kew. Her Majesty's Stationery Office, London.

View in a redwood forest, p. 40.

1988 PARDE, L. 1921. The Principal Species of Exotics in the National

Arboretum at Barres. *Revue des Eaux et Forêt.* 59:167. June 1, 1921. [In French.]

Brief note stating that Coast redwood does not stand the rigorous winters as well as the Sierra redwood; gives measurement of trees in 1920 as compared to 1900 (likely Sierra redwood).

1989 PONTEY, ALEX. 1860. Conifers. *The Gardener's Chronicle* [London]. 20:977. Nov. 3, 1860.

Discussion of conifers, their growth, reaction to climatic conditions, etc., at Upcatt, near Barnstable, England.

1990 SCHENCK, CARL A. 1939. Fremdländische Wald und Parkbäume. P. Parey, Berlin. 3 vols. Illus. [In German].

"Exotic Forest and Park Trees." Discussion of Coast redwood in vol. 2, p. 549.

1991 SMITH, DIANA M., and A. W. DOHR. 1953. Some Tests on Plantation-Grown Redwood from Hawaii. U. S. Forest Prod. Lab., Madison, Wisc. (Unpublished typed report; copy located in library of the Forest Prod. Lab.)

Tests based on five logs from a 25-year-old plantation in the Honaunau Forest Reserve in Kahauloa, South Kona, Hawaii. Plantation 15′ x 15′ spacing; not thinned; 80 feet high; rainfall 100 inches; volcanic soil; 24,000 b.f. per acre. (See also No. 1976.)

1992 SYME, GEORGE. 1877. The Redwood (Sequoia Sempervirens). *The Garden* [London]. 12:295-296. Sept. 29, 1877. Illus.

The tree was introduced into Europe in 1843, but the author states the tree does not do well "in this country except in sheltered places." The author took a trip into the redwoods 15 miles inland on the Russian River; a fallen tree measured 303 feet in length and 15 feet in diameter four feet above the ground. A count showed 1250 growth rings on another tree, "but several of them were rather indistinct."

1993 TAYLOR, W. H. 1919. Shelter-belts: Requirements for the Orchard. *New Zealand J. Agr.* 18: 165-168. March 20, 1919.

Suggests redwood for planting in inland positions, stating that the tree is not wide-spreading and retains its lower branches.

1994 TRABUT, L. 1929. Le Sequoia Sempervirens en Algerie. *Biol. Abs.* 3:2009. Entry 21352. Sept.-Nov. 1929.

Tree planted in 1864 growing well.

1995 TROUP, ROBERT S. 1932. Exotic Forest Trees in the British Empire. The Clarendon Press, Oxford. 259 p. Biblio., index.

The results of introducing redwood into the following British possessions: Australia, British Isles, Borneo, Ceylon, Kenya, New Zealand, Palestine, and South Africa.

1996 TURNER, E. PHILLIPS. 1931. Trees Used in State Afforestation in New Zealand. New Zealand State Forest Serv., Wellington, N. Z. Circular No. 31. 16 p. Illus.

Coast redwood imported into New Zealand is referred to as a competitor of the local totara and matai. It has been planted in experimental areas and is believed capable of producing "milling trees in 40 years." Gives site data for planting. A picture shows a plantation 26 years old, average height 73 feet, average d.b.h. 23½ inches.

1997 VAUGHN-EAMES, HENRY. 1943. Experiments with Redwoods Around New York. *Trees.* 5:11. May 1943. Illus.

The author found it impossible to grow Coast redwood in the New York area but had success with Sierra redwood.

1998 VEITCH, JAMES & SONS. 1881. A Manual of the Coniferae. James Veitch & Sons, Chelsea, England. 350 p.

Description of the tree, p. 212-214, including: range given from San Luis Obispo to the Oregon boundary; introduction into England by Hartweg in 1846, into Europe by the Russians in 1843; the redwood in the British Isles, its form and habitat.

1999 VON MUELLER, FERDINAND. 1888. Select Extra-tropical Plants Readily Eligible for Industrial Culture or Naturalisation with Indications of Their Native Countries and Some of Their Uses. Govt. Printer, Melbourne, Australia. 7th ed.

Sequoia sempervirens, p. 391-392.

2000 WEBSTER, A. D. 1887. The Californian Redwood. *The Garden* [London]. 32:139-140. Aug. 13, 1887.

An account of the redwood in the British Isles 40 years after its introduction. The author recommends the tree for ornamental planting; it survives best on sheltered sites, elsewhere unsatisfactorily. Good seeds are not produced by the British trees. Plants from cuttings tend to be of bad form and require pruning.

2001 WEBSTER, A. D. 1918. Coniferous Trees for Profit and Ornament. Constable and Co., London. 298 p. Index.

General botanical description of the tree, and some specific information on growth in England. Lists two varieties of Sequoia sempervirens: *S. s. adpressa, S. s. albo-spica,* the latter being "of no particular value."

2002 WOODMAN. 1952. Redwood's Coppicing Habit. *Country Life* [London]. 112:607. Aug. 29, 1952. Illus.

Letter to the editor on the sprouting of redwood and the pruning of sprout clumps in bush form. Photograph of an 18-year-old stand (60 feet high), at Dartington Hall, Devon, and a "bush" at Montacute, Somerset.

2003 YUSHKEVICH, N. 1946. Tree Shelterbelts on Subtropical Plantations. *J. Forestry.* 44:206-207. March 1946. [Transl. from the Russian by T. Mills from an article that appeared in *Sotsialisticheskoe Zemledelic,* Oct. 2, 1945].

Contains the following note: "The best trees for shelterbelts in the subtropical districts of western Georgia [U.S.S.R.] appear to be such conifers as Sequoia and different species of Cryptomeria and cypress . . . " The species is not named.

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Abbreviations

— A —

Abs.	Abstract
Acad.	Academy (and all foreign words for it — academia, academie, academisch, etc.)
Admin.	Administration
Agr.	Agriculture (and all foreign words for it)
Amer.	America, American
Anon.	Anonymous
Apr.	April
Arch.	Architecture, -al
Art.	Article
Assoc.	Association
Aug.	August

— B —

B. C.	British Columbia
bd.	board
bd. ft.	board feet
b.f.	board feet
Biblio.	Bibliography (Note: only when material contains a bibliography worthy of notation)
Bien.	Biennial
Biol.	Biology (and all foreign words for it)
b.m.	board measure
Bot.	Botany, -ic, -ical
Br.	Branch
Bros.	Brothers
Bul.	Bulletin
Bur.	Bureau

— C —

c.	circa
C.	Code
Calif.	California
cc.	cubic centimeter
Ch.	Chapter
Chem.	Chemistry, -ical
Chron.	Chronicle
C.I.O.	Congress of Industrial Organizations
Circ.	Circular
circa	about
cm.	centimeters
Co.	Company
Co.	County
Col.	Colonel
col.	colored
Colo.	Colorado
Comm.	Committee
comp.	compiler, compiled
Con.	Concurrent
Conf.	Conference
Cong.	Congress, Congressional
Conserv.	Conservation
Conv.	Convention
Corp.	Corporation

— D —

d.b.h.	diameter breast high
Dec.	December
Dept.	Department
Div.	Division
Doc.	Document, -ary, -ation
Dom.	Domestic

— E —

Ecol.	Ecology, -ical
Econ.	Economy, -ic, -ics
ed.	editor, edition, edited
Educ.	Education, -al
Endl.	Endlicher
Ex. Doc.	Executive Document
Expt.	Experiment, -al
Ext.	Extension
ext.	extract

— F —

f.	following
f.b.m.	feet, board measure
Feb.	February
f.o.b.	free on board
For.	Forestry
ft.	foot, feet

— G —

g.	gram
Geog.	Geography, -ic, -ical
Geol.	Geology, -ical
Govt.	Government

— H —

handb.	handbook
H. I.	Hawaiian Islands
Hist.	History, -ical
H. R.	House of Representatives
hr.(s)	hour(s)

— I —

Ill.	Illinois
Illus.	Illustrated, Illustrations. (Including photographs, descriptive drawings, etc. *See also* Tables.)
in.	inch(es)
Inc.	Incorporated
Indus.	Industry, Industrial
Ins.	Insurance
Inst.	Institute, -ion
Internatl.	International

— J —

J.	Journal
Jan.	January

— L —

La.	Louisiana
Lab.(s)	Laboratory, -ies
Lamb.	Lambert
lb.(s)	pound(s)
Lbr.	Lumber
Legis.	Legislature, -ive
Lit.	Literary
Ltd.	Limited

— M —

M.	*Metasequoia*
M.	thousand
M.A.	Master of Arts
Mag.	Magazine
Mar.	March
Mass.	Massachusetts
M.b.f.	thousand board feet
Mech.	Mechanical
M.F.	Master of Forestry
Mfg.	Manufacturing
Mfr.(s)	Manufacturer(s)
Mimeo.	Mimeographed
Minn.	Minnesota
Misc.	Miscellaneous
Misc. Circ.	Miscellaneous Circular
Misc. Pub.	Miscellaneous Publication
Miss.	Mississippi
M.L.	Master of Law
M.S.	Master of Science
MS(S) or ms.	Manuscript(s)
Mt.	Mount, mountain

— N —

Nat.	Natural
Natl.	National
N. C.	North Carolina
n. d.	not dated
N.E.	Northeast
No.(s)	Number(s)
Nov.	November
n. p.	not paged
nr.	number, numero
n. s.	new series
n. sp.	species novum, new species
N.W.P.R.R.	Northwestern Pacific Railroad
N. Y.	New York
N. Z.	New Zealand

— O —

Oct.	October
O.P.A.	Office of Price Administration
Ore.	Oregon
Organ.	Organization

— P —

p.	page(s)
Pac.	Pacific
Penna.	Pennsylvania
Ph.D.	Doctor of Philosophy
Phila.	Philadelphia
Physiol.	Physiology, -ical
Prelim.	Preliminary
Proc.	Proceedings (e.g., R.R.L.C. Proc. =Redwood Region Logging Conference Proceedings)
Proc.	Processed. (Indicates duplication process other than printing, e.g., mimeographed, typewritten, etc.)
Prod.(s)	Product(s)
Prof.	Professor, Professional
Pt.	Point
Pub.(s)	Publisher, published, publishing, publication(s)
Pub. Res. C.	Public Resources Code

— Q —

Q.	Quarterly

— R —

Res.	Research
Res.	Resolution
Res.	Resources
Rev.	Review(s)
Rev.	Revised, revision
Rev. ed.	Revised edition
R.F.C.	Reconstruction Finance Corporation
R.L.C.	Redwood Logging Conference

Rpt.(s)	Report(s)
R.R.	Railroad
R.R.C.C.	Redwood Region Conservation Council
R.R.L.C.	Redwood Region Logging Conference

— S —

S.	*Sequoia*
Sat.	Saturday
Sci.	Science(s), -tific
S. Con. Res.	Senate Concurrent Resolution
Sec.	Section
Sen.	Senate
Sen. Res.	Senate Resolution
Sept.	September
ser.	series
SERA	State Employment Relief Administration
Serv.	Service(s)
sess.	session
S. F.	San Francisco
Soc.	Society
sp. nov.	species novum
SRI	Stanford Research Institute
Sta.(s)	Station(s)
Stat.	Statute(s)
Supp.(s)	Supplement(s)
Supt.	Superintendent

— T —

tab.	tables
Tables	Tables. (Including graphs, charts, tables, etc. *See also* Illus.)
Tech.	Technic, -ical
temp.	temperature
Tr.	Trade
Trans.	Transaction(s)
transl.	Translated, translations, transla

— U —

Univ.	University, Universal
U. S.	United States
U. S. N.	United States Navy

— V —

vol.(s)	volume(s)
v.p.	various paging
vs.	versus

— W —

Wash.	Washington
Wisc.	Wisconsin
W.P.A.	Works Projects Administration

Periodicals and Series

— A —

Acad. of Pac. Coast Hist.	Academy of Pacific Coast History
Agr. Ext. Serv.	Agricultural Extension Service
Amer. Acad. of Arts and Sci.	American Academy of Arts and Sciences
Amer. Acad. of Political and Social Sci.	American Academy of Political and Social Sciences
Amer. Assoc. for the Advancement of Sci. Proc.	American Association for the Advancement of Science Proceedings
Amer. Forest Prod. Industries, Inc.	American Forest Products Industries, Inc.
Amer. Forestry Assoc.	American Forestry Association
Amer. Forestry Cong.	American Forestry Congress
Amer. Geog. Soc.	American Geographical Society
Amer. J. Bot.	American Journal of Botany
Amer. Museum J.	American Museum Journal
Amer. Philosophical Soc.	American Philosophical Society
Amer. Rev. of Rev.	American Review of Reviews
Amer. Soc. of Mech. Engineers	American Society of Mechanical Engineers

— B —

Boston Soc. of Natural Hist.	Boston Society of Natural History
Bot. Abs.	Botanical Abstracts
Bot. Garden Bul.	Botanical Garden Bulletin
Bot. Gazette	Botanical Gazette
Bul. Soc. Centrale Forest	Bulletin Societé Centrale Forestiere
Bur. of Corp.	Bureau of Corporations
Bur. of Ethnology	Bureau of Ethnology

— C —

Calif. Acad. Natural Sci. Proc.	California Academy of Natural Sciences Proceedings
Calif. Acad. Sci.	California Academy of Sciences
Calif. Agr. Expt. Sta.	California Agricultural Experiment Station
Calif. Agr. Ext. Serv.	California Agricultural Extension Service
Calif. Dept. of Nat. Res.	California Department of Natural Resources
Calif. Forest Protective Assoc.	California Forest Protective Association
Calif. Hist. Soc. Q.	California Historical Society Quarterly
Calif. Range and Expt. Sta.	California Range and Experiment Station
Calif. Redwood Assoc.	California Redwood Association
Calif. State Hist. Assoc.	California State Historical Association
Carnegie Inst. of Wash.	Carnegie Institution of Washington

— F —

Fan Memorial Inst. of Biol., Peiping Bul.	Fan Memorial Institute of Biology, Peiping Bulletin
Forest Prod. J.	Forest Products Journal
Forest Prod. Res. Soc.	Forest Products Research Society

— G —

Geog. Soc. of the Pac.	Geographic Society of the Pacific
Geol. Soc. of Amer. Bul.	Geological Society of America Bulletin

— H —

Highland and Agr. Soc. of Scotland Trans.	Highland and Agricultural Society of Scotland Transactions

— I —

Illinois State Academy of Sci. Trans.	Illinois State Academy of Sciences Transactions
Inst. of Paper Chem.	Institute of Paper Chemistry

— J —

J. of Agr.	Journal of Agriculture
J. Agr. Research	Journal of Agricultural Research
J. of Amer. Chem. Soc.	Journal of American Chemical Society
J. of Econ. Entomology	Journal of Economic Entomology
J. Forestry	Journal of Forestry
J. Geog.	Journal of Geography
J. of Indus. and Engineering Chem.	Journal of Industrial and Engineering Chemistry

— M —

Minn. Hist. Soc.	Minnesota Historical Society

— N —

Natl. Acad. Sci. Proc.	National Academy of Sciences Proceedings
Natl. Geog. Mag.	National Geographic Magazine
Natl. Parks Bul.	National Parks Bulletin
Natl. Parks Mag.	National Parks Magazine
Natl. Shade Tree Conf. Proc.	National Shade Tree Conference Proceedings
New Zealand J. Agr.	New Zealand Journal of Agriculture
News Serv. Bul., School Ed.	News Service Bulletin, School Edition

— P —

Pac. Hist. Rev.	Pacific Historical Review
Pac. Press Pub. Co.	Pacific Press Publishing Company
Pac. Sci. Cong. Proc.	Pacific Science Congress Proceedings
Paper Tr. J.	Paper Trade Journal
Pubs. in Geog.	Publications in Geography

— Q —

Q. J. Forestry	Quarterly Journal of Forestry

— R —

Royal Dublin Soc. Proc.	Royal Dublin Society Proceedings

— S —

San Diego Hist. Soc. Q.	San Diego Historical Society Quarterly
Sci. Amer.	Scientific American
Smithsonian Inst., Bur. of Ethnology	Smithsonian Institution, Bureau of Ethnology

Soc. of Amer. Foresters	Society of American Foresters
Soc. of Calif. Pioneers Q.	Society of California Pioneers Quarterly
Southern Pac. Bul.	Southern Pacific Bulletin

—T—

Thompson's Illus. Q.	Thompson's Illustrated Quarterly
Torrey Bot. Club Bul.	Torrey Botanical Club Bulletin
Trans. of the Bot. Soc.	Transactions of the Botanical Society

—U—

U. S. Dept. of Agr.	United States Department of Agriculture
U.S.F.S.	United States Forest Service
U. S. Natl. Museum Proc.	United States National Museum Proceedings
Univ. of Calif.	University of California

—W—

Western Conserv. J.	Western Conservation Journal
Western Forestry and Conserv. Assoc. Proc.	Western Forestry and Conservation Association Proceedings

—Z—

Zoological Soc. Bul.	Zoological Society Bulletin

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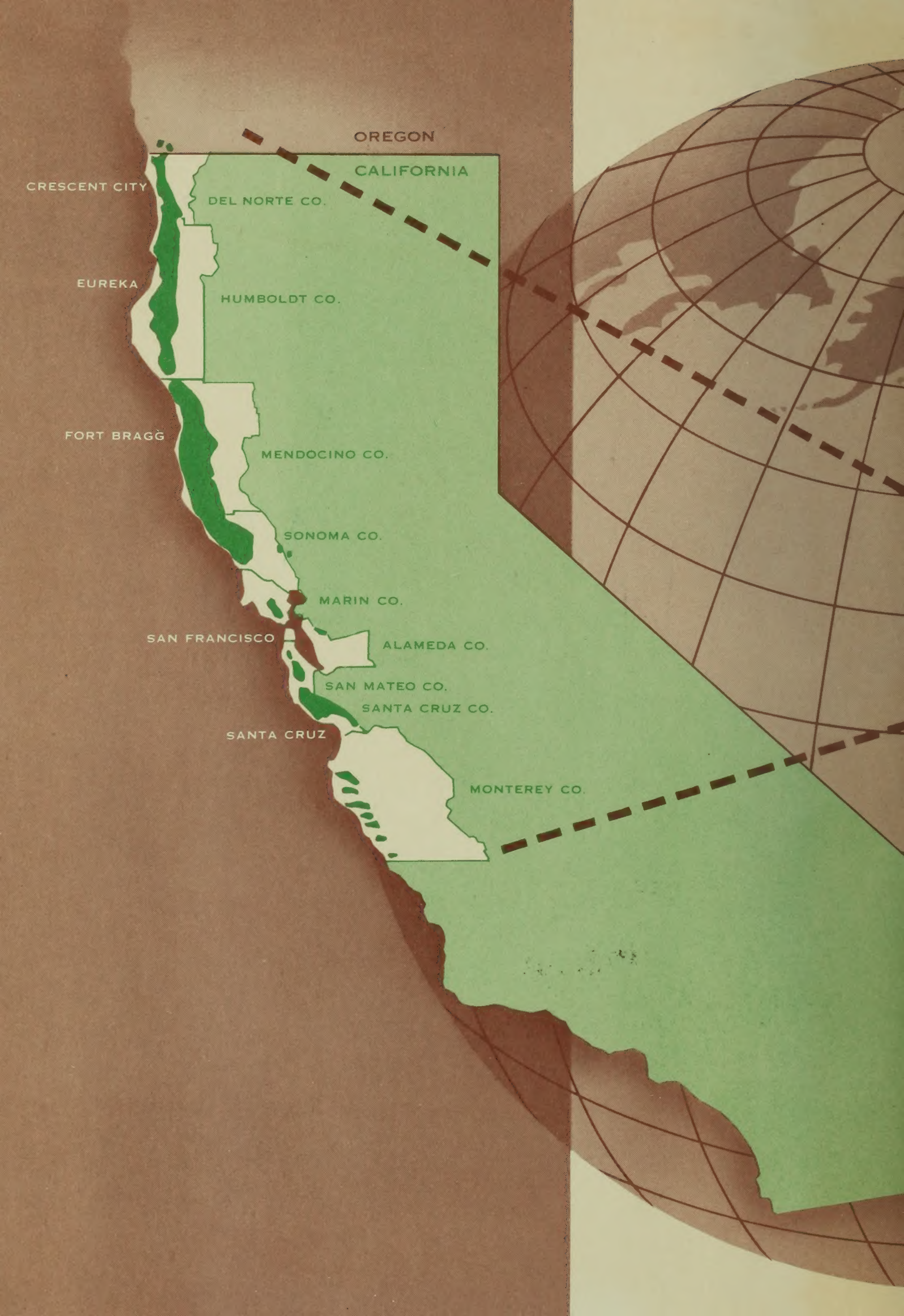
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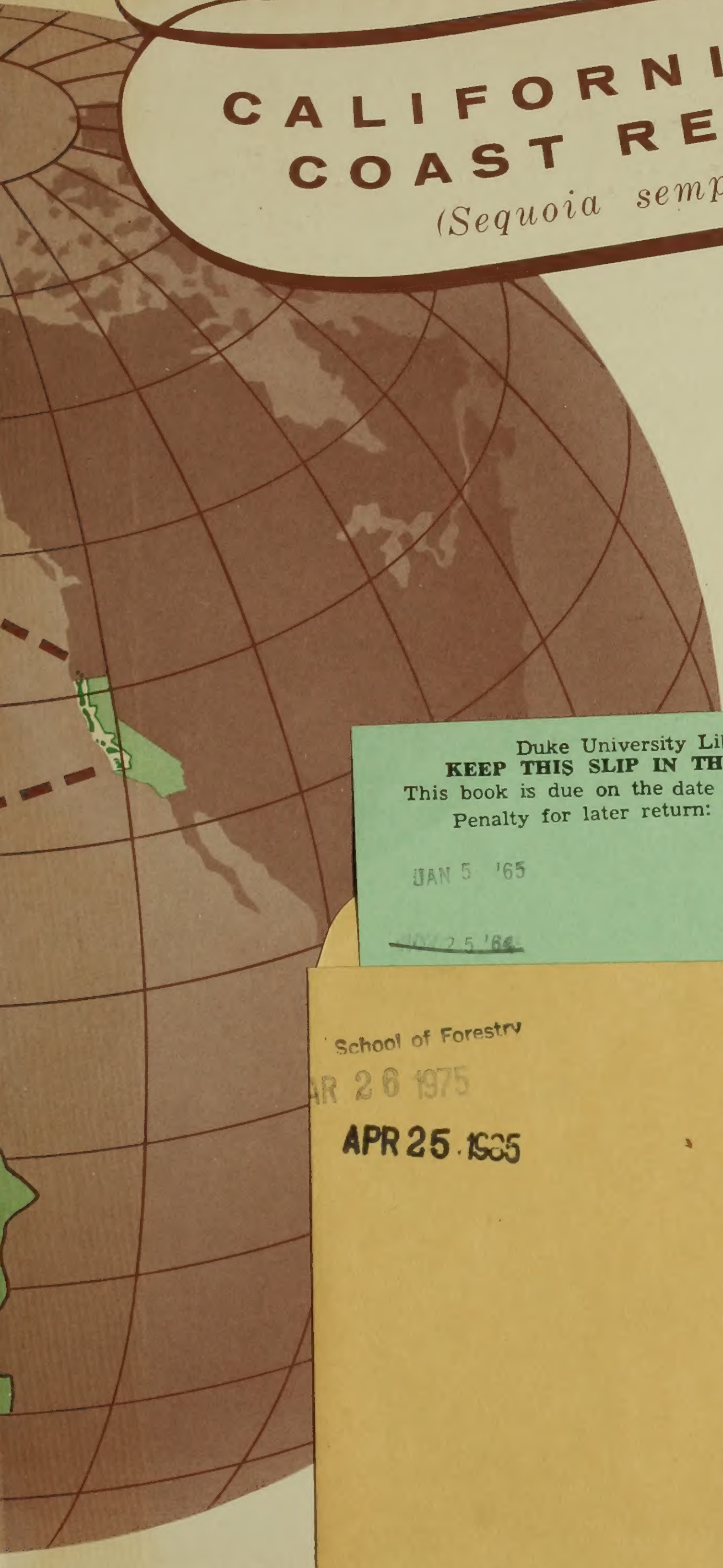
(Sequoia sempervirens)



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